



# 100 PLUS

COVID-19 Researches by  
**NIPSOM**  
2021 - 22



**National Institute of Preventive and Social Medicine (NIPSOM)**  
Ministry of Health & Family Welfare, BANGLADESH

**A Compilation of  
More than 100 Research Papers on COVID-19 by NIPSOM**



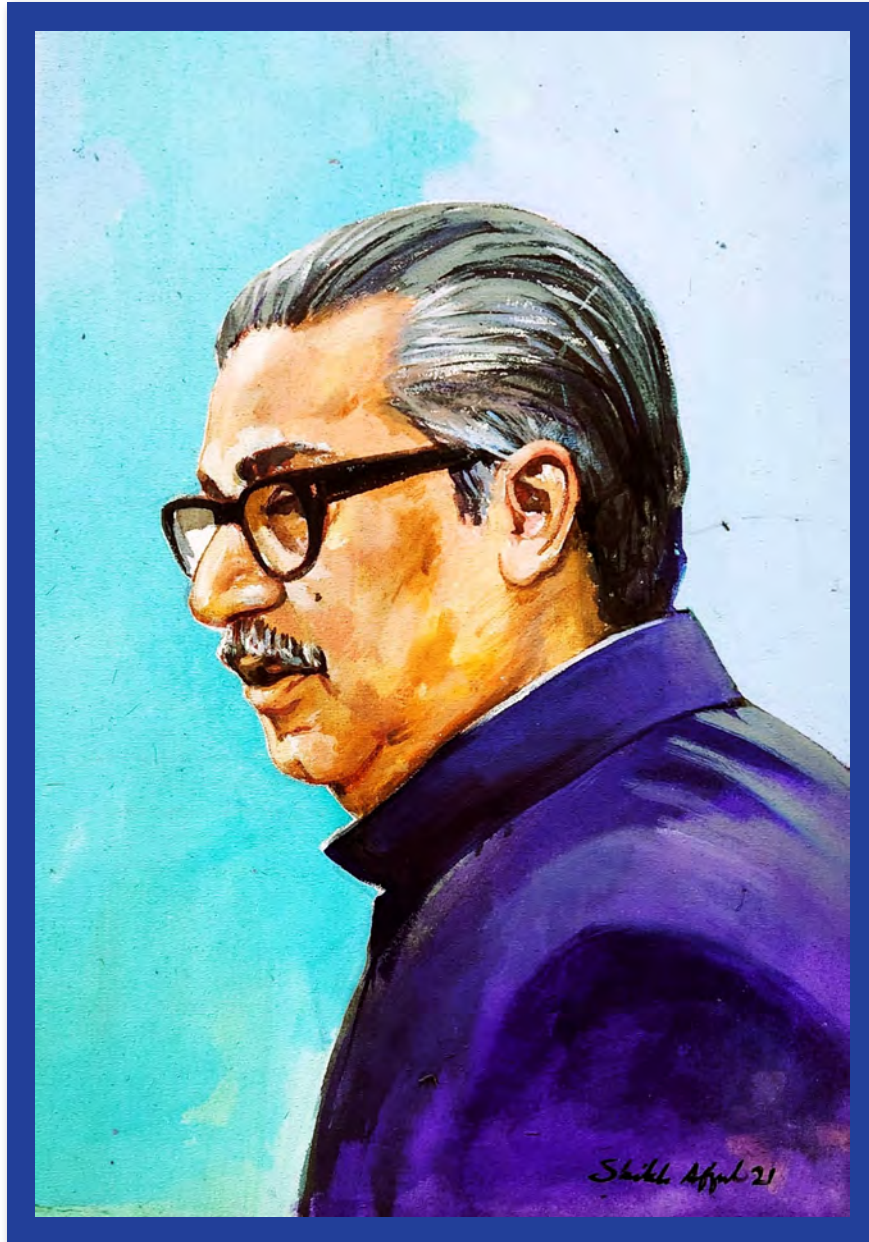
**100** PLUS

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**National Institute of Preventive and Social Medicine (NIPSOM)**  
Ministry of Health & Family Welfare, BANGLADESH



# **Father of the Nation Bangabandhu Sheikh Mujibur Rahman**



***‘Friendship to all, malice towards none’***

*Bangabandhu’s quote in UNGA resolution\**

In the global context of the post-COVID 19 world and the Russia-Ukraine war, the resolution titled ‘International Year of Dialogue as a Guarantee of Peace, 2023’ incorporated Bangabandhu’s quote in its 14th paragraph at the United Nations General Assembly (UNGA) plenary and was adopted unanimously on 7 December 2022

*\*The text was developed based on Bangabandhu’s maiden speech at the UNGA on 25 Sep 1974*







بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**PRESIDENT**  
PEOPLE'S REPUBLIC OF BANGLADESH  
BANGABHABAN, DHAKA

21 Agrahayan 1429  
06 December 2022

## Message

I welcome the initiative of National Institute of Preventive and Social Medicine (NIPSOM) to launch a scientific journal titled '100 plus COVID-19 Researches by NIPSOM'.

Intellectual development which is reflected in research and publications is an essential element of Sustainable development. Proper diagnosis of any problem and effective solution depends on systematic research and findings whether it is medical science, economy or human development. COVID-19 pandemic has brought about significant changes to human lives and livelihoods. Despite plethora of challenges in our development roadmap, Bangladesh has performed better than many countries in terms of infection management, inoculation and social mobility. Apart the pandemic management, Bangladesh has made remarkable achievements in the area of health, population and poverty reduction. The country has graduated from the least developed countries (LDC) category last year and thriving to become a developing economy.

I appreciate the efforts and contribution made by NIPSOM during COVID-19 pandemic. I hope, the scientific journal on COVID-19 Researches published by NIPSOM will help understand various issues of the pandemic and facilitate breakthroughs in prevention and treatment of COVID-19 infection.

I wish the Endeavour of NIPSOM a grand success.

Joi Bangla

Khoda hafez, May Bangladesh Live Forever

**Md. Abdul Hamid**





بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



## Message



PRIME MINISTER  
GOVERNMENT OF THE PEOPLE'S REPUBLIC OF  
BANGLADESH

22 December 2022  
07 Poush 1429

I am immensely glad to know that, NIPSOM is set to launch a scientific journal, titled '100 Plus COVID-19 Researches by NIPSOM'. I extend my heartiest congratulations to the all concerned.

Father of the Nation Bangabandhu Sheikh Mujibur Rahman established National Institute of Preventive and Social Medicine (NIPSOM) in 1974 with the motto 'Prevention is better than cure'. That's another vivid evidence of his famous farsightedness. Immediately after achieving the blood-shed independence, Bangabandhu generated all the avenues to ensure good health and well-being for his beloved people; upgrading the Rural Health Centre (RHC) into Thana Health Complex (THC) is one among many other examples. While emphasizing on quality clinical services for his people, the visionary leader simultaneously sensed the significance of preventive health. Thus founded NIPSOM to lead in this sector.

The Awami League government has given utmost priority to the health sector to facilitate the country's socio-economic development since assuming office in 2009. We have formulated the 'National Health Policy, 2011' in order to ensure primary and emergency health care for all. We have established new medical colleges, dental colleges, nursing colleges and institutes, and health technology institutes across the country. The number of beds and medical services in general hospitals and specialized hospitals have been multiplied. A total of 18,500 community clinics and union health centers have been set up to provide health services to the doorsteps of the rural people.

NIPSOM has been providing quality education by offering MPH and MPhil degrees in public health. Its collaboration and affiliation with world class institutes and agencies, like WHO, UNICEF have cross-fertilized its capability and strengthened presence to cope with global crisis like COVID-19 pandemic. While the whole world was reeling under the threat of COVID-19, Bangladesh was performing very good in testing, treating, vaccinating and awareness raising and finally fighting out the crisis very smartly. Bangladesh ranked top in South Asia & 5th in world in COVID Recovery Index.

Our government is firmly committed to safeguard people's right to access to health. We have made significant advancement in terms of life expectancy, fertility rate, infant and maternal mortality etc. Mass vaccination, resulting eradication of diseases like polio have illuminated our image to the global community.

I have been informed that NIPSOM has contributed enormously performing the tests for detection of COVID-19 and controlling the pandemic. In the midst of the vulnerable situation, they also executed a good number of research activities and could publish those in internationally acclaimed journals.

Hence, I like to thank everybody working at NIPSOM for their undeniable contribution and fathomless sacrifice during the COVID-19 pandemic.

Joi Bangla, Joi Bangabandhu  
May Bangladesh live forever.

Sheikh Hasina







بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**Minister  
Ministry of Health & Family Welfare**

GOVERNMENT OF THE PEOPLE'S REPUBLIC OF  
BANGLADESH

## Message

It provides me with immense pleasure to learn that National Institute of Preventive and Social Medicine (NIPSOM) is publishing a scientific journal titled '**100 Plus COVID-19 Researches by NIPSOM**' which encompasses the brief descriptions of more than hundred researches on the pandemic. Under the dynamic leadership of honorable Prime Minister Sheikh Hasina there are lots of success stories in every sector, particularly in health and family planning sector. But I sometimes regret to find that these positive stories are not properly or intelligently documented and presented before the people of Bangladesh. Here I can see that NIPSOM not only did completed remarkable number of researches on COVID- 19 but also compiled its summaries in a souvenir. This kind of compilation makes people convenient to lend their attention to the findings and recommendations of researches between two covers.

Bangladesh is recognized by the international community as an exceptional health performer. The country has innumerable success stories such as fertility rate reduction, infant and maternal mortality decrease, laudable implementation of Expanded Program on Immunization (EPI), remarkable achievements in attaining Millennium Development Goals (MDGs), child mortality reduction, child nutrition improvement, health networks expansion. Community Clinic, the brain child of honorable Prime Minister, is a perfect example of this phenomenon which has been recognized as a role model across the world. Public health is credited with adding around 25 years to the life expectancy of people in Bangladesh in last four decades. The country is also very much on-track to achieve the SDG targets.

As COVID-19 broke out, we strengthened country's public health system. In this densely populated country administering the mass vaccination program against COVID-19 was not an easy task to execute; we finally proved our capability in running this program as well. Bangladesh ranked 5th in world in Covid Recovery Index and top in South Asia.

NIPSOM played formidable role during this crisis, especially in testing, diagnosis, information sharing, awareness raising and finally finding way-out through their research and publications.

I hope every success of this initiative and expect even more innovative and ground-breaking

findings and implementation in future through their research and development endeavor.

Joi Bangla, Joi Bangabandhu  
Long live Bangladesh.

**Zahid Maleque, MP**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**Secretary**  
**Health Services Division**  
**Ministry of Health & Family Welfare**  
Government of the People's Republic of  
Bangladesh

## **Message**

It appears very worthy and exciting that National Institute of Preventive and Social Medicine (NIPSOM) is going to publish a journal titled '**100 Plus COVID-19 Researches by NIPSOM**' comprising of research papers, activities and subsequent contribution to combat the pandemic since March 2020.

Present government has taken several steps to attract the intellectual professionals in conducting researches. Honorable Prime Minister Sheikh Hasina urged them on many occasions to come forward to devote themselves into researches. In the last fiscal year, she allocated 100 crore takas for the Ministry of Health & Family Welfare to utilize it for researches. So, it's good to see that NIPSOM prioritized research activities in its mission.

Since its establishment by Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1974, NIPSOM kept itself evolving in achieving its objectives like teaching, research, training and advocacy. It is producing public health specialists who are working home and abroad with name and fame in both public and private sector.

I take this opportunity, with gratefulness, to recall all government, semi-government and non-government agencies' role in fighting COVID-19. Just after the outbreak we formed national response team headed by honorable health minister, announced extra pay for frontline health workers, declared insurance coverage for front liners, supplied PPE for all service providers, circulated health and hygiene guidelines to arrest community transmission, pronounced health care providers' role to address the crisis with no lapse and so on. We procured adequate vaccines and arranged to administer those for free which was hugely challenging job for a developing country like ours. At the end, it was a success story that also made position in international news headlines.

COVID-19 was the toughest challenge ever while it was a great opportunity as well to learn how to cope with unpredictable events and how learning from tough time comes to great use of a nation. I'm pleased to observe that NIPSOM has capitalized the opportunity comprehensively. They ensured quality RT-PCR tests, executed trainings for health professionals, provided invaluable advices to different stakeholders and conducted a significant number of researches. I am confident that this journal would make many learning and action items available for the health workers.

I wish all the best and expect even superior role of NIPSOM in future to contribute in health sector.

Joi Bangla

**Dr. Md. Anwar Hossain Howlader**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**Secretary**  
**Medical Education & Family Welfare Division**  
**Ministry of Health & Family Welfare**

Government of the People's Republic of  
Bangladesh

## Message

It is indeed a great pleasure that National Institute of Preventive and Social Medicine (NIPSOM) is going to publish a scientific journal, titled **'100 Plus COVID-19 Researches by NIPSOM'**. The publication will be enclosing research papers on COVID-19 conducted by the faculties and students of the institution.

NIPSOM, established by Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1974, is the apex body in public health education in Bangladesh. Other than teaching it has got three more objectives, e.g., research, training & advocacy. For the last five decades NIPSOM has been playing pivotal role in these areas of public health and reached a new height with the untiring efforts of the institute.

Coordinated action, funding and political commitments were key to saving lives and preventing economic, health and societal damage from COVID-19 in Bangladesh. Under the charismatic leadership of honorable Prime Minister Sheikh Hasina, the struggles against the pandemic turned into a well-praised success story. The swift, equitable roll-out of vaccines, tests, and treatments was crucial to help the country combat COVID-19 and our government could meet global targets on vaccination coverage, testing rates, and access to treatments and PPE.

NIPSOM contains a good record of performing necessary duties whenever the country had disease outbreaks like dengue, chikungunya, swine flu, avian influenza and so on. COVID-19 was not an exception. NIPSOM set themselves a formidable task when they came up in the frontline with commitment to safeguard the health of the people of our country. The doctors, medical technologists and other health workers of NIPSOM devoted themselves in testing, information sharing, awareness raising and finally finding way-outs through their research and publications. The validity or accuracy of the results of RT-PCR and other tests in relation to COVID-19, done by NIPSOM, was lauded by domestic authorities and international communities.

In addition to increasing access to masks, gloves, gowns and tests, Ministry of Health & Family Welfare also increased access to the evidence-based technical guidance for health workers to save lives. In this regard, NIPSOM performed excellent job by producing evidence-based interventions through their research.

Last but not the least, we are grateful to people from all walks of life, especially frontline health workers for their unparalleled contribution and cooperation to manage this worst crisis ever.

I particularly appreciate NIPSOM for their efforts and engagement to organize such a wonderful scientific publication. I hope, it would help us to initiate improved actionable for the betterment of humanity.

**Md. Saiful Hassan Badal**





Vice-Chancellor  
Bangabandhu Sheikh Mujib Medical University

Shahbag, Dhaka

## Message

NIPSOM, established by the Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1974, is an affiliated institute to Bangabandhu Sheikh Mujib Medical University (BSMMU) under the Faculty of Preventive and Social Medicine (PSM). My message would be incomplete if I forgot to mention that once I had discharged my duties as the Dean of PSM. I always feel pleasure to state that I am inherently related to public health and NIPSOM. I have learnt a lot with my close connections in diverse activities of NIPSOM. All these experiences enabled me to contribute to health policy making, dynamic management, devising innovative interventions and solving various health problems using holistic public health approaches.

Since the inception as the first medical university of the country in 1998, BSMMU has focused on healthcare, medical education, and research. Aligned with these objectives, NIPSOM has provided a great deal of contribution in medical education and research as the apex institution in the field of public health in Bangladesh. During the COVID-19 pandemic, there was no exception as NIPSOM joined the fight against the crisis with other frontliners.

Honorable Prime Minister Jononetttri Sheikh Hasina is eager to see that the medical doctors have engaged themselves for enough period in research. Whenever I meet, Her Excellency inquires about the progresses of research at BSMMU and encourages me reiterating that she would continue to extend her full support in this regard.

As a leading discipline, public health has contributed to the health development of Bangladesh in terms crucial health indicators. As the apex public health institute, NIPSOM has participated in this agenda of health development through performing comprehensive preventive, promotive, curative and rehabilitative activities. As a leading institute of public health, it must be mentioned that the faculties and students of NIPSOM are playing a vibrant role by conducting researches on public health important issues. I feel proud of their rigorous tasks and its' dissemination.

Thus, I am delighted as NIPSOM has come up with a journal entitled '**100 Plus COVID-19 Researches by NIPSOM**'. All the accomplishments of NIPSOM has achieved in its battle against the adversities of the pandemic situation, as an affiliated institute of ours, is a matter of pride and honor for me and for BSMMU.

I believe that NIPSOM will continue to perform at the highest level to protect the public health and safety in the country as it has done before. I hope, NIPSOM, along with BSMMU will continue to perform to reach the level of excellence to achieve the goal of realizing the dream of the Father of the Nation.

I would like to express my gratitude for the sacrifices and hard work put in by the Director, faculty, lab personnel and support staff during the fight against the pandemic. Their commitment to help others while putting at risk your own safety is beyond words. Finally, I would like to thank and congratulate all the faculties and students of NIPSOM for this exceptional notion of publishing a journal on the research on COVID-19.

Joi Bangla

Prof. Dr. Md. Sharfuddin Ahmed



**Director General  
Directorate General of Health Services**

Government of the People's Republic of  
Bangladesh

## **Message**

It is indeed my great pleasure to know that the National Institute of Preventive and Social Medicine (NIPSOM) is going to launch a journal titled '100 Plus COVID-19 Researches by NIPSOM' sketching its research activities and subsequent contribution to fighting the crisis of COVID-19 pandemic since March 2020.

As an apex body in public health, NIPSOM's performance in public health education, training, consultancy, and research is undeniable since its establishment by Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1974. Affiliated to BSMMU through the Faculty of Preventive and Social Medicine it has strengthened and enriched its contribution to all relevant fields of health sector of the country.

The health sector of Bangladesh has witnessed, in recent years, remarkable global recognition for its health successes especially because of the efficient use of scarce resources to produce good health outcomes. While Bangladesh's experience can help other countries to learn, we are also open to helping other countries by engaging our real-life experts and staff directly or indirectly.

Bangladesh's exceptional health outcomes are partly due to both the structure of the public sector and the pluralistic health system, which is characterized by equitable and extensive outreach to households. Community clinic is a perfect example of this character which has been recognized as role model in the world. The successes and the recognitions also have given us the confidence to make improvements in the unfinished agenda provided we get the right knowledge from the research.

Today I would like to recall NIPSOM's roles during the COVID-19 pandemic and express my thanks and gratitude for accommodating all challenges to stay aligned with the government's initiative to cope with the crisis. Their sacrifices and precious contribution braving all adversities through their lab, technicians, doctors, researchers, support staff, and faculties were formidably important.

Finally, I would like to congratulate all the faculties and students of NIPSOM for this time bound initiative of publishing a journal on a significant number of researches on COVID-19. I do hope, NIPSOM shall keep exercising more effective research and repeat pro-people practices during every crisis within and beyond the national boundary.

Once again, I would like to extend my heartfelt thanks to all concerned for making me part of this great endeavor.

**Prof. Dr. Abul Bashar Mohammad Khurshid Alam**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



**Director General**  
**Directorate General of Medical Education**

Government of the People's Republic of  
Bangladesh

## Message

I am overtly pleased that the National Institute of Preventive and Social Medicine (NIPSOM) is going to launch a journal titled '100 Plus COVID-19 Researches by NIPSOM' depicting its research works and subsequent contribution to fighting the crisis of the Covid-19 pandemic since March 2020. It's also a matter of immense pleasure that NIPSOM has been working hard and contributing equally in education, training, advocacy and crisis mitigation alongside the other government agencies

The remarkable achievements of Bangladesh in accomplishing the targets of MDGs are expected to be continued in the SDG era as well. Our achievement in improving maternal and child health, reducing infant and maternal mortality, and improving life expectancy is attributable to many government bodies and institutions like NIPSOM. My fathomless gratitude to all health workers, researchers, and partners for their continued support to assist my country's endeavor in public health system graduation.

The Directorate General of Medical Education (DGME) is responsible for taking care of the quality of medical education of doctors and few other health professionals on behalf of the Ministry of Health & Family Welfare of Bangladesh. DGME remains complacent with NIPSOM as the institution, established by Father of the Nation Bangabandhu Sheikh Mujibur Raman in 1974, has been spearheading the public health education in the country for the last fifty years. Public health workforce, generated by NIPSOM are working all over the world with name and fame.

I expect this research document will assist us in the evaluation of the effectiveness of our existing policies and in planning newer ones in the coming years. The hard work of the designated personnel of NIPSOM involved in data collection, compilation, presentation, and publication deserves appreciation, especially during the nationwide lockdown situation of the coronavirus pandemic. I would like to thank the DGME & DGHS personnel for their efforts on the overall activities and in the process of publication.

I would like to convey my special thanks to the faculties and students of NIPSOM for their innovative method of publishing this journal in a well-coordinated fashion. Finally, I would like to appreciate NIPSOM personnel for their uninterrupted intellectual coordination among different departments/sections relating to the overall publication process.

It's a matter of our immense pride that NIPSOM has been retaining its legacy to add value to many public health contemporary issues. For attaining sustainable development in this competitive era research and publications are the most important area that keeps us competitive at home and abroad. Finally, I would like to extend my gratitude and thanks once again for granting me an opportunity to be part of this great work.

**Prof. Dr. AHM Enayet Hussain**



بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



Director

National Institute of Preventive & Social Medicine (NIPSOM)

Ministry of Health & Family Welfare

## Editorial & Message

I feel proud that I'm sailing an organization, named NIPSOM, which was built by Father of the Nation Bangabandhu Sheikh Mujibur Rahman in 1974. The significance of preventive & social health, which is popularly termed as public health, even in this 21<sup>st</sup> century, is not always duly recognized by many policymakers. But Bangabandhu, the foresightful leader, did rightly address the issue with due importance at the early stages of rebuilding process of the war-torn country.

To achieve and sustain excellence in every area of public health, NIPSOM has been working hard in teaching, training, research & consultancy, maintaining and developing its historical position as a world-class institute, and enriching the international, national, and regional communities through the fruits of its expertise. It has become the largest producer of public health expert workforce in Bangladesh.

It is said that the season of failure is the best time for sowing the seeds of success. Like everywhere else, Bangladesh also had to go through the doldrums of COVID-19 pandemic. From the very outset NIPSOM came forward with several interventions to deal with the crisis. Its laboratory was immediately equipped with necessary logistics and personnel were trained to perform the RT-PCR and other necessary tests for COVID-19. NIPSOM was the first health facility of the country to manufacture an app to publish the test results online. Sample donors could obtain their test reports on our website only by inserting their phone number; simultaneously they were informed by an SMS. Academic activities for MPH & MPhil students were administered by using digital platforms. Different campaigns were run to raise awareness among the community about the dos and don'ts for them to prevent and combat the deadly disease. Faculties and students were inspired and activated soon to conduct research. Laboratory samples were utilized to do research on biochemical topics. Researchers along with their enumerators dared to visit COVID-19 dedicated hospitals to collect data. Their courageous efforts and earnest devotion culminated in a good number of research papers, few of which were published in world famous journals like The Lancet, Plos One and so on. This journal is the display of their research papers.

Honorable Prime Minister Sheikh Hasina has long been advocating for research. She has urged doctors and other medical professionals on many occasions to get themselves involved in scientific research. Not only that, but she also appeared herself as the chief patronizer of research by sanctioning 300 crores of BDT for the last three years. The academicians of NIPSOM and their disciples thus can have a sense of some satisfaction as they have made response to Her Excellency's call particularly in a very adverse situation.

We'd like to give a big thank to all our colleagues, who worked relentlessly on the frontline to care for people in need, and our support staff working behind the scenes, in the fight against coronavirus. I am humbled to work alongside such a dedicated crew and appreciate their continued commitment to serving the people. Special thanks and gratitude to the team which has done a tremendous job in publishing this gorgeous journal. I alone shoulder the responsibility of flaws available in it despite of our utmost care. It would be our immense pleasure if the readers found the publication useful.

Joi Bangla

Prof. Dr. Baizid Khorshid Riaz, PhD



## RESEARCH



‘In medical sector we lack of researches. But in Bangabandhu Sheikh Mujib Medical University and in upcoming universities I have given enormous importance to research. In Chittagong and Rajshahi Medical University, their principal job should be conducting researches. Postgraduate degree aspirants, studying there, should concentrate on research. Because the sociodemographic characteristics of our own people, our weather, climate, all other factors that contribute to develop diseases should be researched. The research findings could lead to invent appropriate treatment. Currently Bengali people, working abroad, are getting opportunities and inventing many things. So why not this would happen in our country! We have the talents. I strongly believe that the most meritorious students choose to study in medical science and engineering. Hence, we have our talented generation with us. We like to build up our nation and attain international standards. Our country will remain synchronized with global advancement.’

### **Honorable Prime Minister Sheikh Hasina**

**4<sup>th</sup> National Convention of Shadhinota Chikitschok Parishad (SWACHIP)  
29 Kartik 1422, 13 November 2015, Friday, Historic Suhrawardy Udyan, Dhaka**



## Editorial Board



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Dr. Md. Nazmul Hassan Refat, Asst. Professor (PH & HA), NIPSOM

### Contributors

Dr. Md. Hamdullah, MO, CM, NIPSOM

Dr. Ajmari Sharmin, Lecturer, MCH, NIPSOM

Dr. Fahad Mahmood, Lecturer, CM, NIPSOM

Dr. Afsana Nazneen, Lecturer, OEH, NIPSOM

### Special Contributor

Dr. Md. Asif Adnan, Lecturer, BIOS, NIPSOM

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## Successes to Combat COVID-19 by Indicators

One of the top 3 inspirational women leaders during COVID-19 pandemic in the Commonwealth

**1 of 3**



**Honorable  
Prime Minister  
Sheikh Hasina**

Bangladesh in Covid Recovery Index

**Top in South Asia  
5th in world**



**Nikkei's  
COVID-19  
Recovery Index  
(Japan)**

Vaccination rate against COVID-19 in Bangladesh

**1st Dose: 84%  
2nd Dose: 73%**



**Target of  
WHO  
70%**

Case Fatality Rate (CFR)  
in COVID-19 in Bangladesh

**1.4%**



**Global (Highest)  
18%**

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Mr. Zahid Maleque MP, Minister, MoH&FW and Director, NIPSOM at United Nations General Assembly (UNGA)



A delegation led by Mr. Zahid Maleque MP, Minister, MoH&FW attends World Health Assembly in Geneva, Switzerland



Director, NIPSOM at Bangladesh China India Myanmar (BCIM) Health Conference in China



Director, NIPSOM at PEER Program Advisory Committee Meeting of ADPC in Bangkok, Thailand





# CHAPTER-1

Research Abstracts by  
**NIPSOM Faculties**

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## **CHAPTER-1**

### **Summaries of Researches by NIPSOM Faculties**

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## Responses of NIPSOM Lab at the very outset of COVID-19 pandemic





## Post-traumatic stress disorders and coping strategies of health professionals during COVID-19 pandemic in Bangladesh: findings of a countrywide cross-sectional study

**Publication Status** : Published  
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### Investigators Details

#### Principal Investigator



**Prof. Dr. Baizid Khorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Prof. Dr. Md. Ziaul Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

#### Co-investigator



**Dr. Helal Uddin Ahmed**  
Associate Professor  
(Child Adolescents and  
Family Psychiatry),  
NIMH

#### Co-investigator



**Dr. Khursheda Akhter**  
Associate Professor  
(RCH), NIPSOM

#### Co-investigator



**Dr. Aysha Haque**  
Assistant Professor (HE),  
NIPSOM

#### Co-investigator



**Dr. K M Bayzid Amin**  
Assistant Professor (CM),  
NIPSOM

#### Co-investigator



**Dr. Fahad Mahmood**  
Lecturer, Dept. of CM,  
NIPSOM

#### Co-investigator



**Dr. Md. Nazmul Hassan Refat**  
Assistant Professor  
(PH&HA), NIPSOM

#### Co-investigator



**Dr. Farzana Islam**  
Medical Officer, Dept. of  
OEH, NIPSOM

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## Post-traumatic stress disorders and coping strategies of health professionals during COVID-19 pandemic in Bangladesh: findings of a countrywide cross-sectional study

B.K. Riaz<sup>1</sup>, M.Z. Islam<sup>2</sup>, H.U. Ahmed<sup>3</sup>, K. Akhter<sup>4</sup>, A. Haque<sup>5</sup>, K.M.B. Amin<sup>6</sup>,  
F. Mahmood<sup>7</sup>, M.N.H. Refat<sup>8</sup>, F. Islam<sup>9</sup>

<sup>1</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>3</sup>Associate Professor, Child Adolescents and Family Psychiatry, National Institute of Mental Health (NIMH), Sher-E-Bangla Nagar, Dhaka

<sup>4</sup>Associate Professor, Department of Public Health and Hospital Administration (PH&HA), NIPSOM, Mohakhali, Dhaka, Bangladesh

<sup>5</sup>Assistant Professor, Department of Health Education (HE), NIPSOM, Mohakhali, Dhaka, Bangladesh

<sup>6</sup>Assistant Professor, Department of Community Medicine (CM), NIPSOM, Mohakhali, Dhaka, Bangladesh

<sup>7</sup>Lecturer, Department of Community Medicine (CM), NIPSOM, Mohakhali, Dhaka, Bangladesh

<sup>8</sup>Assistant Professor, Department of Public Health and Hospital Administration (PH&HA), NIPSOM, Mohakhali, Dhaka, Bangladesh

<sup>9</sup>Medical Officer, Department of Occupational and Environmental Health (OEH), NIPSOM, Mohakhali, Dhaka, Bangladesh

### SUMMARY

#### Background:

The entire healthcare system of Bangladesh is working nonstop to withstand the hardship of COVID-19 pandemic. Health professionals have been going through enormous physical and psychological impacts to endure this catastrophe. This novel virus forced the health professionals to cope up with the drastic changes including its unpredictable nature, inadequate health facilities, extended working hours and the scarcity of personal protective equipment (PPE). Moreover, the health professionals are socially stigmatized for being frontiers of this pandemic. All of these factors have been endangering the health and wellbeing of the health professionals, which draw a special attention. The present study was intended to determine psychological impacts, state of wellbeing, associated factors along with coping strategies among the health professionals during COVID-19 pandemic in Bangladesh. This study was conducted by National Institute of Preventive and Social Medicine (NIPSOM) with financial assistance of Medical Education and Health Manpower Development (ME&HMD), an operational plan (OP) of Directorate General of Medical Education (DGME) under the Medical Education and Family Welfare Division (ME&FWD) of Ministry of Health and Family Welfare (MoH&FW), Bangladesh.



## Methods:

The country-wide cross-sectional study was carried out during January to June 2021 among health professionals who served COVID-19 patients at the tertiary and secondary level public health facilities in 8 (eight) divisions of the country. Data were collected during March and April 2021 when the case detection rate was around 10% and mortality rate was around 1%. The psychological impact was assessed in terms of post-traumatic stress disorder (PTSD), which was defined as a condition of persistent mental and emotional stress occurred as a result of traumatic experience or witness during COVID-19 patient management. The health professionals who have at least one-month experience of working with COVID-19 patients were included in the study. Total 1394 health professionals were enrolled in the study purposively. The study used a mixed method of quantitative and qualitative approaches for data collection. In the quantitative part, data were collected from 596 physicians, 713 nurses and 85 medical technologists through face-to-face interview using a semi structured questionnaire. In the qualitative part, the study enrolled 307 health professionals (120 physicians, 130 nurses and 57 medical technologists) to collect data through in-depth interview (IDI). Quantitative data were analyzed by SPSS while qualitative data were analyzed by Atlas-Ti software. The study obtained ethical clearance of the Bangladesh Medical Research Council (BMRC) and permission of the Bangladesh Bureau of Statistics (BBS). Participation of health professionals was voluntary and ensured by obtaining informed written consent. To ensure quality of data, proper monitoring and supervision were carried out during data collection, analysis and interpretation.

## Results (Highlights):

1. Majority of the health professionals were female (62.9%) and married (83.6%).
2. Around one fourth (23.5%) of the health professionals had post-traumatic stress disorder (PTSD). It was more prevalent in the physicians (24.3%) in comparison to the nurses (22.8%) and technologists (23.5%).
3. PTSD was significantly ( $p < 0.05$ ) higher in the females (25.8%) than in the males (19.5%).
4. PTSD was higher in the age group 30-49 years (25%) in comparison to the age groups 22-29 years (21.3%) and 50-58 years (14.8%) but the differences were not statistically significant ( $p > 0.05$ ).
5. PTSD was around one and half times (1.5) higher in the health professionals having (27.7%) elderly people than not having (20.3%) elderly people in the family. The difference was statistically significantly ( $p < 0.05$ ).
6. PTSD was more prevalent in the health professionals having children (24.3%) than those not having children (21.4%) in their families but the difference was not statistically significant ( $p > 0.05$ ).
7. By working departments, 24.2% of laboratory, 24.2% of outdoor, 23.6% of indoor and 21.2% of emergency departments had PTSD. But the difference was not statistically significant ( $p > 0.05$ ).
8. PTSD was 1.8 times higher among the health professionals working in specialized hospitals (39.2%) than the health professionals working in district hospitals (26.3%) and medical college hospitals (18.5%).
9. PTSD was around 1.6 times higher among the health professionals had who worked  $\geq 8$  hours (25.9%) in a day than those who worked 6 hours (15.3%).
10. Health professionals having 9-14 family members had significantly ( $p < 0.05$ ) higher PTSD (26.1%) in comparison to those who had family members 5-8 (24.3%) and 2-4 (22.5%).
11. Health professionals confronted diverse challenges including extensive workload, scarcity of personal protective equipments (PPEs) and risk of nosocomial infections.

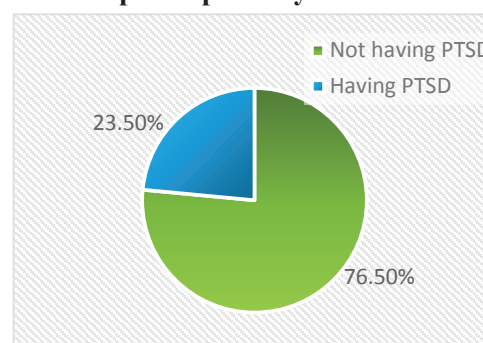


12. Health professionals were afraid of unpredictable nature of the disease and lack of definite guidelines and therapy to manage the patients.
13. Health professionals were socially stigmatized for being frontiers of the pandemic, which endangering the psychological health and wellbeing of the health professionals.
14. Negative attitude of the society, some media and mass people aggravated their mental stress.
15. Most of the participants were mentally stressed, tired and many had difficulty in sleeping.
16. Some health professionals were worried about their families and relatives, which aggravated their anxiety.
17. Some of the health professionals felt frustration and anxiety due to uncertain and hopeless future.
18. To mitigate stress disorder, health professionals adopted diverse adaptive coping strategies including prayer, reciting the holy Quran, watching TV, reading book or newspaper, using internet and social media.
19. Health professionals also adopted some maladaptive coping strategies including tobacco consumption and taking sedatives to overcome the stress disorder.
20. Self-motivation of the health professionals, adequate workplace safety and health facilities along with positive social support to their families could be crucial to relieve their post-traumatic stress disorder.

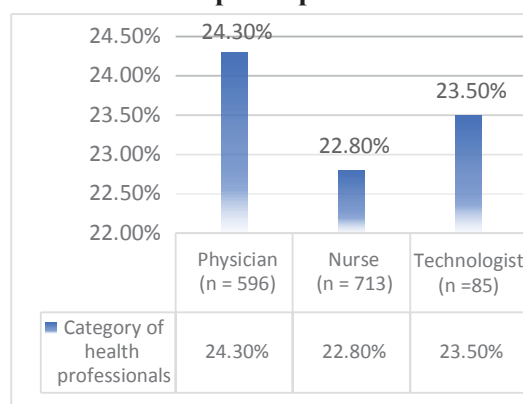
**Table 1. Background characteristics of the participants**

Attributes	Frequency	Percentage
<b>Gender</b>		
Male	517	37.1
Female	877	62.9
<b>Total</b>	<b>1394</b>	<b>100</b>
<b>Marital status</b>		
Married	1166	83.6
Unmarried	223	16
Divorced/Widow	5	0.4
<b>Total</b>	<b>1394</b>	<b>100</b>
<b>Having elderly family member</b>		
Having elderly	593	42.5
Not having elderly	801	57.5
<b>Total</b>	<b>1304</b>	<b>100</b>
<b>Category of health professional</b>		
Physician	596	42.8
Nurse	713	51.1
Medical technologist	85	6.1
<b>Total</b>	<b>1394</b>	<b>100</b>
<b>Work duration in a day (hour)</b>		
6	320	23
≥8	1074	77
<b>Total</b>	<b>1394</b>	<b>100</b>

**Figure-1: Distribution of the participants by PTSD**



**Figure-2: PTSD by category of the participants**



**Table 2. PTSD by background characteristics**

Attribute	Category	Not having PTSD f (%)	Having PTSD f (%)	Significance
Age (Years)	22-29	350(78.7)	95(21.3)	p>0.05
	30-49	671(75.0)	224(25.0)	
	50-58	46(85.2)	8(14.8)	
Gender	Male	416(80.5)	101(19.5)	p<0.01
	Female	651(74.2)	226(25.8)	
Having children in the family	Having	758(75.7)	243(24.3)	p>0.05
	Not having	309(78.6)	84(21.4)	
Having elderly in the family	Having	429(72.3)	164(27.7)	p<0.01
	Not having	638(79.7)	163(20.3)	
No. of family members	2-4	567(77.5)	165(22.5)	p<0.05
	5-8	449(75.7)	144(24.3)	
	9-14	51(73.9)	18(26.1)	
Type of family	Nuclear	602(78.1)	169(21.9)	p>0.05
	Joint	465(74.6)	158(25.4)	
Residence	Urban	1065(76.6)	326(23.4)	p>0.05
	Sub-urban	2(66.7)	1(33.3)	
Marital status	Married	889(76.2)	277(23.8)	p>0.05
	Unmarried	175(78.5)	48(21.5)	
	Divorced/Widow	3(60.0)	2(40.0)	
Monthly income	<50000	915(76.6)	279(23.4)	p>0.05
	≥50000	152(76.0)	48(24.0)	

**Table 3. Experiences of health care provision**

Theme	Sub theme	Quoted experience
Health care provision experience	Caring experience	<i>"As it is an infectious disease, we had the same fear as the patients. Many things were unknown to us. The hospitals were not ready to treat this type of new disease. Threats of duty-induced infection along with a negative attitude of the society including patients, media, and mass people aggravated our mental stress".</i>
	New learning	<i>"I learned about how to wash hands, give oxygen, and use PPE".</i>
	Health care response	<i>"Doctors, nurses, medical technologists, and ward boys, all our staff actively participated in health care provision".</i>
	One-day experience	<i>"Witnessed sudden death of many COVID-19 patients in a single day. The attendants could not accept it and started a lot of hustle and bustle".</i>
	Preparation perceived on COVID-19 duty	<i>"We were given instructions on personal protection and treatment guidelines. But no PPE was supplied initially rather we arranged ourselves"</i>
	Influenced mostly by	<i>"Man is mortal." "Even if I stay at home and do not serve the patient, I may die". "Not like that, I don't have to die"</i>





Table 4. Experiences of wellbeing		
Theme	Sub theme	Quoted experience
Well-being experience	Daily life experience	<i>"I was depressed, hopeless due to a lockdown, an economic crisis, and a panic situation in the working place". "At first, I was scared. I have a four years old baby, just wanted to come to me again and again. He used to look at me through the window, which felt very bad".</i>

Table 5. Experiences of psychological stress		
Theme	Sub theme	Quoted experience
Psychological impact	Psychological stress felt	<i>"It was felt like a war. The probability of survival or death was fifty-fifty". "Being the only son in the family and was also newly married. I used to feel extreme mental distress when I thought about what would happen to them if I died".</i>

Table 6. Experiences of resilience and coping		
Theme	Sub theme	Quoted experience
Resilience and coping	Coping strategies	<i>"I wore a uniform and treated myself as an extraordinary person; I thought I would sacrifice my life for them". "I tried to be positive to serve the patients as a doctor, a frontier, health worker".</i>
	Support got to cope	<i>My father always told me "What would you do if I was infected and admitted there? It's your job, and you have to do it". "As frontline workers, we the health care workers must do our duty at any cost, but if we get inspiration and support, we will do our duty more willingly &amp; efficiently".</i>

### Policy recommendations:

- To mitigate psychological impact of the health professionals, sufficient PPE, equipment, logistics and adequate manpower for serving COVID patients must be available at the health facilities.
- To alleviate PTSD, periodic screening could be conducted among health professionals for early detection of adverse symptoms.
- To reduce PTSD, special emphasis must be paid on health protection, workplace safety, accommodation, food supply, adequate rest and family support for the health professionals.
- To prevent psychological stress, positive attitudes and cooperation of the society must be strengthened for the health professionals.
- To relieve PTSD, prioritized interventions should be given based on gender, family structure, type of hospital and work duration.
- To strengthen psychological well-being of the health professionals, recovery and counselling programs should be organized.
- To improve skill of the health professionals, need-based training on management of COVID-19 patients must be organized.
- To reduce PTSD, adaptive coping strategies must be promoted to keep a positive mindset of the health professionals.



## Association of COVID-19 with maternal and perinatal outcomes in pregnancies during pandemic in Bangladesh

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### Investigators Details

#### Principal Investigator



**Prof. Dr. Baizid Koorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Dr. Fahmida Akter**  
Associate Professor  
(EPID), NIPSOM

#### Co-investigator



**Dr. Mohammad Rashidul Alam**  
Associate Professor  
(CM), NIPSOM

#### Co-investigator



**Dr. Ummul Khair Alam**  
Assistant Professor  
(RCH), NIPSOM

#### Co-investigator



**Dr. Mohammad Asraful Alam**  
Assistant Professor  
(OEH), NIPSOM

#### Co-investigator



**Dr. Ajmari Sharmin**  
Lecturer, Dept. of MCH,  
NIPSOM

#### Co-investigator



**Dr. Kamrun Nahar**  
Lecturer, Dept. of  
PH&HA, NIPSOM



## Association of COVID-19 with maternal and perinatal outcomes in pregnancies during pandemic in Bangladesh

B.K. Riaz<sup>1</sup>, F. Akter<sup>2</sup>, M.R. Alam<sup>3</sup>, U.K. Alam<sup>4</sup>, M.A. Alam<sup>5</sup>, A. Sharmin<sup>6</sup>, K. Nahar<sup>7</sup>

<sup>1</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Associate Professor, Department of Epidemiology (EPID), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>3</sup>Associate Professor, Department of Health Education (HE), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>4</sup>Assistant Professor, Department of Maternal and Child Health (MCH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>5</sup>Assistant Professor, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>6</sup>Lecturer, Department of Maternal and Child Health (MCH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>7</sup>Lecturer, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

### SUMMARY

#### Introduction:

The COVID-19 pandemic potentially increases doctors' work demands and limits their recovery opportunity; this consequently puts them at a high risk of adverse mental health impacts. Physicians' poor mental health not only affects their professional performance but also affects the quality of healthcare provided by them. Hence, the study was carried to assess the perceived mental stress of the physicians involved in treatment of COVID-19.

#### Methods:

This was a retrospective cohort study conducted at Dhaka Medical College Hospital, Mugda Medical College Hospital, Shaheed Suhrawardy Medical College Hospital, Mohamamdpur Fertility Services & Training Center and Greenlife Medical College Hospital in Dhaka City during the period from January to June 2021. The data were collected through record review and telephone interview of both COVID-19 positive and negative pregnant women using a WHO standardized semi-structured questionnaire. Pregnant women who had tested positive by RT-PCR for COVID-19 during their current pregnancy or immediate postpartum period were considered as COVID-19 positive. The sample size was 890 (215 COVID-19 positives and 675 COVID-19 negatives). Fifteen (15) data collectors with minimum qualification of MBBS and five (05) data supervisors with medical post graduates (MPH with MBBS) were recruited for conduction of this research work. They were trained in a package program. They learned about objectives, benefits, risks and burdens of this study. Precise data about investigating maternal and perinatal outcomes in COVID and non COVID pregnant women



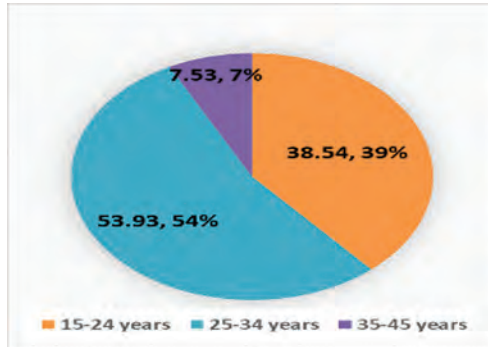
were assessed. To ensure quality control, proper attention through direct supervision was given by the investigators. A subset of questionnaire was re-checked in the field for validity. A software package of SPSS (version 25.0: SPSS Inc., Chicago, IL, USA) was used to analyze the data. Descriptive statistics were used for all variables. Values were expressed as percentage and mean and Fisher's exact test was carried out to evaluate association between categorical variables where  $p\text{-value} < 0.05$  was considered as statistically significant. Relative risk was also seen. Ethical clearance from the Institutional Review Board (IRB) of NIPSOM was obtained prior to conduction of this research.

### Key Findings:

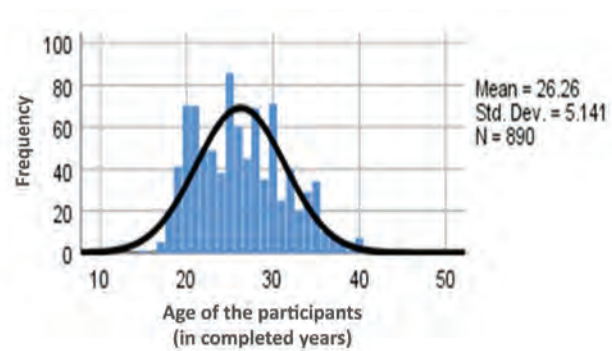
1. Mean age of the participants was 26.3 ( $\pm 5.1$ ) years. Among the participants more than half (54%) were within the age group of (24-35) years. (Figure 1 & 2).
2. Majority participants (80.5%) were students, house wife and unemployed (Figure 3).
3. Most of the participants (78.97%) had completed their education from secondary level up to post graduation (Figure 4).
4. Above half of the participants (59.1%) had a history of past pregnancy (Figure 5).
5. Majority of them (98.31%) had a history of taking medications during current pregnancy (Figure 6).
6. Those who took medication had 1.9 times more chance to develop normal maternal outcome than those who did not take medication. So, taking medication had protective effect against adverse maternal outcome.
7. Above half of the participants (56.97%) were presented with complication during current pregnancy.
8. Among 215 COVID positive pregnant women, majority (91.2%) were symptomatic, 8.4% were asymptomatic and only 0.5% were dead. Among all the symptoms, fever (77.6%), cough (43.9%), shortness of breath (39.8%), loss of taste (37.2%), loss of smell (32.7%) and headache (26.5%) were mostly experienced by the COVID positive patients. (Figure 7 & 8).
9. The participants were most commonly suffering from chronic disease like diabetes (29.8%), hypertension (28.7%) and thyroid disease (10.6%) (Figure 9)
10. COVID positive mothers with chronic conditions had 2.2 times more risk for development of adverse maternal outcome than those without chronic conditions.
11. Considering the comorbidity among the 215 COVID positive pregnant women, majority (96.3%) were found as high-risk pregnancy and only (3.8%) were found as low risk pregnancy.
12. COVID positive mothers with high-risk pregnancies had 2.6 times more risk for developing adverse maternal outcome than those with low-risk pregnancies.
13. Most of the participants had normal maternal outcome (live birth without any complication) (95.8%) and rest of them had adverse outcomes (4.2%) which were considered as ectopic pregnancy, missed abortion, induced abortion, still birth and death. (Figure 10)
14. COVID positive mothers were 1.3 times more prone to develop adverse maternal outcome (5.1%) than those who were COVID negative.
15. COVID positive mothers had 14.75 times more risk to develop adverse perinatal outcome (43.7%) than those of COVID negative.
16. COVID positive mothers had 2.1 times more risk to develop complication during pregnancy (95.5%) than those who were COVID negative.
17. Newborns of COVID positive mothers were 28.1 times more risk to get admission in NICU than those of COVID negative mothers.



**Figure 1: Distribution of the respondents according to age group**



**Figure 2: Normal distribution of the age**



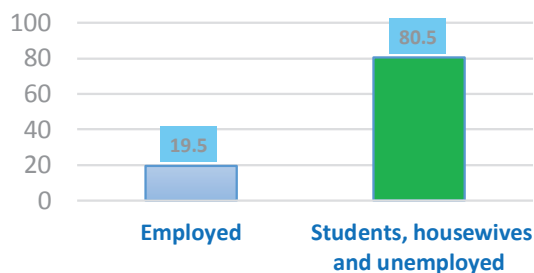
**Table 1: Association between maternal and perinatal outcome with COVID exposure during pregnancy**

Exposure		Outcome		
	<b>Maternal Outcome</b>		<b>P value</b>	<b>Risk ratio</b>
	<b>Normal</b>	<b>Adverse</b>		
	<b>f (%)</b>	<b>f (%)</b>		
COVID positive	204(94.9%)	11(5.1%)	<0.05	1.3
COVID negative	649(96.1%)	26(3.9%)		
	<b>Neonatal Outcome</b>		<b>P value</b>	<b>Risk ratio</b>
	<b>Normal</b>	<b>Adverse</b>		
	<b>f (%)</b>	<b>f (%)</b>		
COVID positive	126(58.6%)	89(41.4%)	<0.000	27.94
COVID negative	665(98.5%)	10(1.5%)		
	<b>Perinatal outcome</b>		<b>P value</b>	<b>Risk ratio</b>
	<b>Normal</b>	<b>Adverse</b>		
	<b>f (%)</b>	<b>f (%)</b>		
COVID positive	121(56.3%)	94(43.7%)	<0.000	14.75
COVID negative	655(97.0%)	20(3.0%)		
	<b>Complication of pregnancy</b>		<b>P value</b>	<b>Risk ratio</b>
	<b>Absent</b>	<b>present</b>		
	<b>f (%)</b>	<b>f (%)</b>		
COVID positive	10(4.7%)	205(95.5%)	0.000	2.1
COVID negative	373(55.3%)	302(44.7%)		
	<b>NICU admission</b>		<b>P value</b>	<b>Risk ratio</b>
	<b>Yes</b>	<b>No</b>		
	<b>f (%)</b>	<b>f (%)</b>		
COVID positive	89(43.4%)	116(56.6%)	0.000	28.1
COVID negative	10(1.5%)	639(98.5%)		

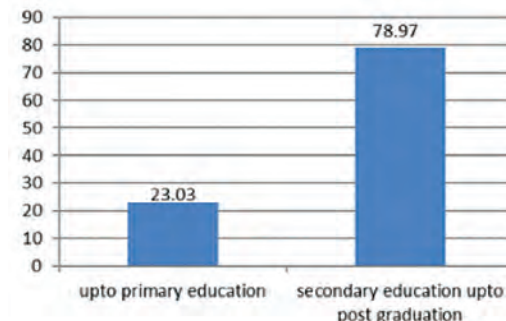




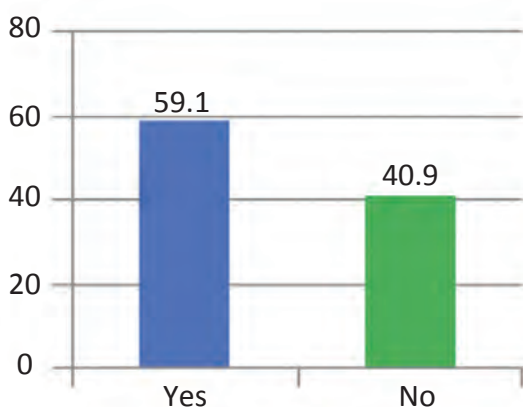
**Figure 3: Distribution of the respondents according to occupation**



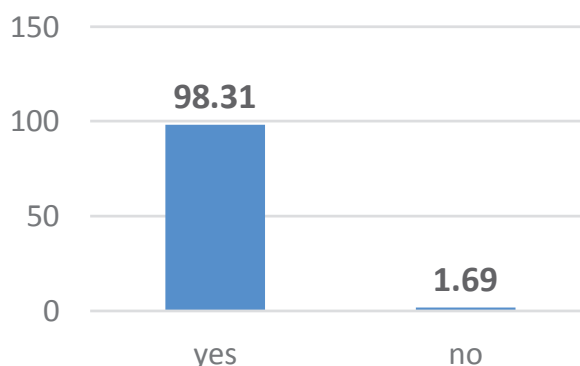
**Figure 4: Distribution of the respondents according to education**



**Figure 5: Distribution of the respondents according to history of past pregnancy**



**Figure 6: Distribution of the respondents according to medication during current pregnancy**

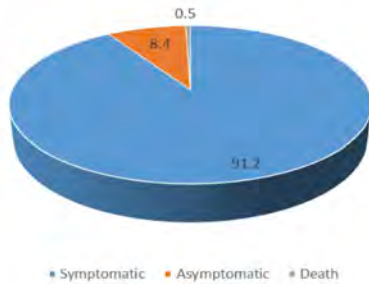


**Table 2: Association between socio-demographic characteristics and maternal outcome in COVID positive patients**

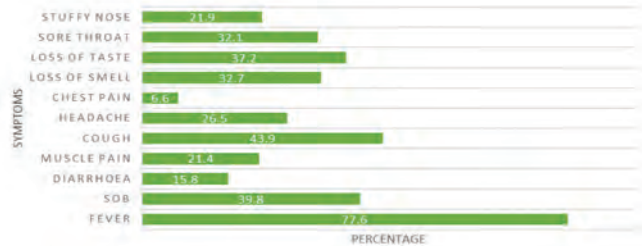
Baseline characteristic		Maternal outcome in COVID positive patients		Relative Risk
Area of residence		Normal outcome	Adverse outcome	Relative Risk for adverse maternal outcome 2.3
	Rural	27 (12.6%)	3 (1.4%)	
	Urban	117 (82.3%)	8 (3.7%)	
Medications used		Normal outcome	Adverse outcome	Relative Risk for normal outcome 1.9
	Yes	202(94%)	9 (4.2%)	
	No	2 (0.9%)	2 (0.9%)	
Chronic conditions		Normal outcome	Adverse outcome	Relative Risk for adverse maternal outcome 2.2
	Yes	87 (40.5%)	7 (3.3%)	
	No	117 (54.4%)	4 (1.9 %)	
Risk of pregnancy				Relative Risk for adverse maternal outcome 2.6
	Low	7(3.3%)	1(0.5%)	
	High	197(91.6%)	10(4.7%)	



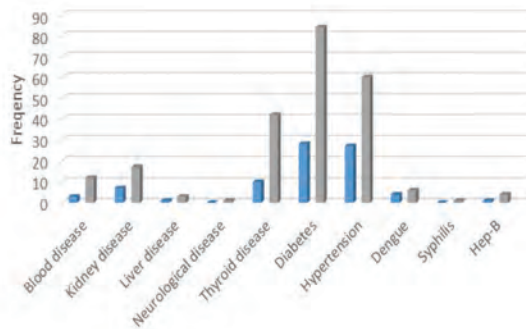
**Figure 7: Distribution of the respondents according to symptom expression**



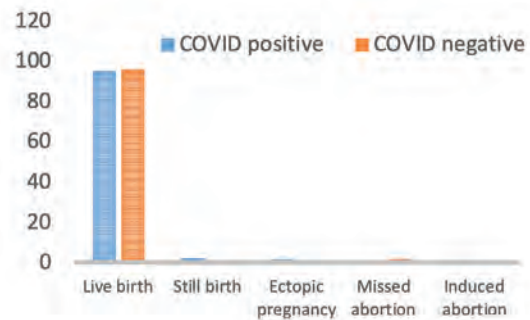
**Figure 8: Distribution of the respondents according to symptoms**



**Figure 9: Distribution of the respondents according to comorbidity**



**Figure 10: Distribution of the respondents according to maternal outcome**



### Conclusion:

The hypotheses of the study were accepted that maternal and perinatal outcomes of pregnancy were associated with COVID-19 infection.

### Recommendations:

- All health facilities should strengthen the management of the keeping records of patient profiles and investigations
- Special attention should be given to pregnant mothers with comorbidities in the COVID situation
- All pregnant mothers should be ensured to take the necessary medications during pregnancy and the postpartum period.



## Risk factors associated with morbidity and mortality outcomes of COVID-19 patients on the 28th day of the disease course: a retrospective cohort study in Bangladesh

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### Principal Investigator



**Prof. Dr. Md. Ziaul Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

### Co-investigator



**Prof. Dr. Baizid Khorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

### Co-investigator



**Dr. A N M Shamsul Islam**  
Associate professor  
(PH&HA), NIPSOM

### Co-investigator



**Dr. Fahmida Khanam**  
Associate Professor  
(Virology), NIPSOM

### Co-investigator



**Dr. Jabin Akhter**  
Assistant Professor  
(Microbiology), NIPSOM

### Co-investigator



**Dr. Rafaat Choudhury**  
Assistant Professor  
(Microbiology), NIPSOM

### Co-investigator



**Dr. Nasreen Farhana**  
Associate Professor  
(Microbiology), NIPSOM

### Co-investigator



**Dr. Naznin Akter Jahan**  
Assistant Professor  
(Biochemistry), NIPSOM

### Co-investigator



**Dr. Mohammad Jamal Uddin**  
Assistant Professor  
(Virology), NIPSOM

### Co-investigator



**Dr. Syeda Sumaiya Efa**  
USADID's Alliance for  
Combating TB,  
Bangladesh



## **Risk factors associated with morbidity and mortality outcomes of COVID-19 patients on the 28th day of the disease course: a retrospective cohort study in Bangladesh**

M.Z. Islam<sup>1</sup>, B.K. Riaz<sup>2</sup>, A.N.M.S. Islam<sup>3</sup>, F. Khanam<sup>4</sup>, J. Akhter<sup>5</sup>, R. Choudhury<sup>6</sup>,  
N. Farhana<sup>7</sup>, N.A. Jahan<sup>8</sup>, M.J. Uddin<sup>9</sup>, S.S. Efa<sup>10</sup>

<sup>1</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>2</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>3</sup>Associate professor, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>4</sup>Associate Professor, Department of Parasitology (PAR) National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>5</sup>Assistant Professor, Department of Microbiology and Mycology (MICRO & MYCO), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>6</sup>Assistant Professor, Department of Health Education (HE), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>7</sup>Associate Professor, Department of Microbiology and Mycology (MICRO & MYCO), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>8</sup>Assistant Professor, Department of Nutrition & Biochemistry (NUTRI & BIO), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>9</sup>Assistant Professor, Department of Parasitology (PAR), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>10</sup>Diabetic Association of Bangladesh. USAID's Alliance for Combating TB in Bangladesh, BADAS TB Initiative in Bangladesh

### **SUMMARY**

#### **Introduction:**

Globally 213 countries are reported to have the ongoing pandemic situation of COVID-19 with rapidly sprouting worldwide transmission. Bangladesh is also confronting the toll of this highly contagious disease in terms of morbidity and mortality across the country. Diverse factors influence the risk of death and critical illness of the COVID-19 patients. Information on risk factors associated with the outcomes of the COVID-19 is very scarce in Bangladesh. This study aimed to identify the risk factors associated with morbidity and mortality outcomes of the COVID-19 patients. The study was conducted by National Institute of Preventive and Social Medicine (NIPSOM) with the financial allocation of Government of Bangladesh.

#### **Methods:**

A single-centered retrospective cohort study was conducted during April to July 2020. A cohort of 1187 COVID-19 patients was enrolled who were laboratory-confirmed by real-time reverse





transcriptase–polymerase chain reaction (RT-PCR) assay at the central laboratory of NIPSOM within 1<sup>st</sup> to 30<sup>th</sup> May 2020. Based on the selection criteria, 1016 (85.6%) patients participated in the study. Data were collected from 15<sup>th</sup> may to 30<sup>th</sup> June 2020 regarding the baseline characteristics, symptoms, comorbidities, risk factors and outcomes of the disease. Data were collected through telephone-interview and reviewing medical records using a semi-structured questionnaire and checklist respectively. Both morbidity (not-cured) and mortality (non-survivor) outcomes were compared with the risk factors at the 14<sup>th</sup> and 28<sup>th</sup> day of the disease. Data analysis was done using the SPSS software. Quality control of data and ethical issues were maintained strictly.

### Results (Highlights):

1. Among the participants diagnosed as COVID-19 positive, 89.9% were aged 59 years or below. The rest 10.1% were aged 60 years or above. Among them, males were 64.1%, and females were 35.9%. The highest proportion of the participants were service holders (32.5%, except health workers), followed by 18.6% health workers, 15.6 % housewives and 14% were doing business. Maximum respondents were from an urban area (69.3%), rest 30.7% were from the rural part of the country. The majority of the patients had a monthly income of Taka 20,000 to 50,000 (42.7%), followed by 29.9% had Taka >50,000 and 27.4% had Taka <20,000 (Table-1).
2. Among the COVID-19 patients, case fatality rate (CFR) was 2.5%. Among them, 2.3% died within the 14<sup>th</sup> day of their diagnosis and only 0.2% died within the 15<sup>th</sup>-28<sup>th</sup> days. Most of the death (92%) occurred within the 14<sup>th</sup> day of their diagnosis (Figure-2). For those who died within the 28<sup>th</sup> day of their diagnosis, 76% were males and 24% were females (Table-3).
3. Among the COVID-19 patients, 35.6% were cured within the 14<sup>th</sup> day and this rate went up to 94% within the 28<sup>th</sup> day of their diagnosis. After the 14<sup>th</sup> day of being diagnosed, 64.4% suffered from different symptoms, but this percentage went down to 6% after the 28<sup>th</sup> day (Figure-2).
4. Regarding comorbidities present in the COVID-19 patients, diabetes mellitus was found to be the most common (35%), followed by hypertension (28.4%), chronic obstructive pulmonary disease or lung disease (16.6%) and coronary heart disease (7.8%) (Figure-1).
5. At least one or more comorbidities were present among 78.3% of the COVID-19 patients who died within the 14<sup>th</sup> day of their diagnosis. On the other hand, among the survivors (after the 14<sup>th</sup> day), 32.8% were found to have one or more comorbidities (Table-3).
6. At least one or more comorbidities were present among 80% of the COVID-19 patients who died within the 28<sup>th</sup> day of their diagnosis. On the other hand, among the survivors (after the 28<sup>th</sup> day), 22.2% were found to have one or more comorbidities (Table-3).
7. Among the patients who died within 14 days of their diagnosis, one third (33.3%) had at least three or more comorbidities. Moreover, 27.8% had two comorbidities and 38.9% had one (Table-3).
8. Among the COVID-19 survivors after 14 days of their diagnosis, less than one-tenth (9.2%) had at least three or more comorbidities. Moreover, 27.5% had two comorbidities and 63.3% had one (Table-3).
9. Among the patients who died within 28 days of their diagnosis, 30% had at least three or more comorbidities. Moreover, 30% had two comorbidities and 40% had one (Table-3).
10. Among the patients who survived after 28 days of their diagnosis, no one had three or more comorbidities. Again, 37.5% had two comorbidities and 62.5% had one (Table-3).
11. Among the COVID-19 patients who died within 14 days, 39.1% were suffering from COPD or other chronic lung diseases, followed by diabetes (39.1%), hypertension (34.8%), coronary heart disease (17.4%) and chronic kidney disease (7.4%) (Table-3).
12. Among the patients who died within 28 days, 40% were suffering from COPD or other chronic lung diseases, followed by diabetes (36%), hypertension (36%), coronary heart disease (16%) and chronic kidney disease (16%) (Table-3).
13. Among the COVID-19 patients who survived after 14 days, 16.5% had diabetes, followed by hypertension (13.8%), Chronic obstructive pulmonary disease (COPD, 8.7%), coronary heart disease (4%) and chronic kidney disease (1.7%) (Table-3).



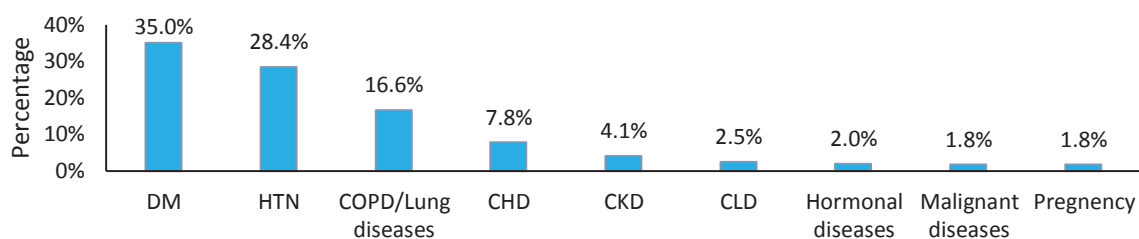


14. Among the COVID-19 patients who survived after 28 days, 17.2% had diabetes, followed by hypertension (13.7%), chronic obstructive pulmonary disease (COPD, 7.6%), coronary heart disease (3.6%) and chronic kidney disease (1.7%) (Table-3).
15. Of those COVID-19 patients who died within 14 days of their diagnosis, 60.9% were aged 60 years or more. The rest 39.1% aged 59 years or less. Male (78.3%) death was more than female (21.7%) (Table-3).
16. Among the COVID-19 survivors after the 14<sup>th</sup> day of their diagnosis, 91.6% were aged 59 years or less, rest 8.4% were aged 60 years or more. Within the survivors, 63.4% were males and 36.6% were females (Table-3).
17. Among patients who died within 28 days of their diagnosis, 56% were aged 60 years or more. Rest 44% aged 59 years or less. Males died (76%) in a larger proportion than females (24%) (Table-3).
18. Among the COVID-19 survivors after the 28<sup>th</sup> day of their diagnosis, 91% were aged 59 years or less, rest 9% were aged 60 years or more. Within the survivors, 63.8% were males, and 36.2% were females (Table-3).
19. Among the COVID-19 patients who were cured within the 14<sup>th</sup> day, 90.1% were aged 59 years or less, rest 9.9% were aged 60 years or more. Moreover, the proportion of males being cured was 64.4% and among the females, the proportion was 35.6% (Table-2).
20. Among the COVID-19 patients who were not cured within the 14<sup>th</sup> day, 89.8% were aged 59 years or less, rest 10.2% were aged 60 years or more. Moreover, the proportion of males not being cured was 63.9% and this proportion was 35.6% in females (Table-2).
21. Among the COVID-19 patients who were cured within the 28<sup>th</sup> day, 90.8% were aged 59 years or less, rest 9.2% were aged 60 years or more. Moreover, the proportion of males being cured was 63.8% and among the females, the proportion was 36.2% (Table-2).
22. Among the COVID-19 patients who were not cured within the 28<sup>th</sup> day, 75.4% were aged 59 years or less, rest 24.6% were aged 60 years or more. Moreover, the proportion of males not being cured was 68.9% and this proportion was 31.1% in females (Table-2).

**Table 1. Baseline characteristics of the COVID-19 patients**

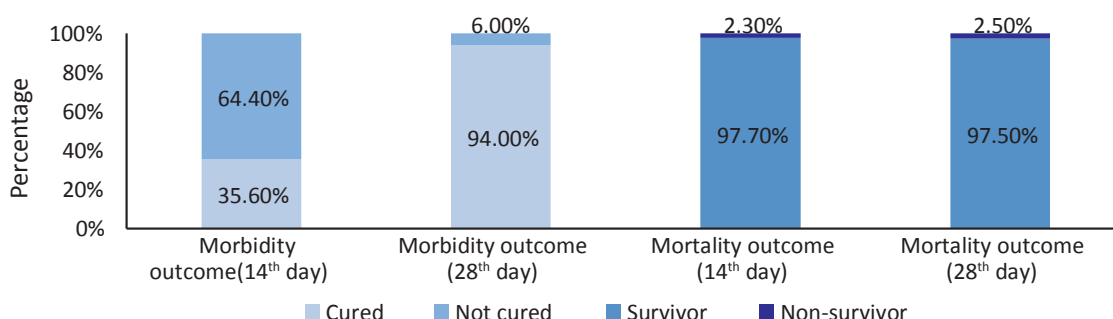
Baseline characteristic	Category	Percentage, %
<b>Age (Years)</b>	≤59	89.9
	≥60	10.1
<b>Sex</b>	Male	64.1
	Female	35.9
<b>Marital status</b>	Married	72.6
	Unmarried	23.2
	Widow/widower/Divorced	04.1
<b>Education</b>	Up to primary	18.1
	SSC and HSC	42.3
	Graduation and above	39.6
<b>Occupation</b>	Housewife	15.6
	Service (Excluding health workforce)	32.5
	Business	14.0
	Health workforce (Doctor: 5.7%, Nurse: 4.2%)	18.6
	Others (Students, retired, day labor, farmer, etc.)	19.4
<b>Place of residence</b>	Rural	30.7
	Urban	69.3
<b>Monthly family income (Tk.)</b>	<20,000	27.4
	20,000-50,000	42.7
	>50,000	29.9





COPD: Chronic obstructive pulmonary disease; DM: Diabetes mellitus; CHD: Coronary heart diseases; HTN: Hypertension; CLD: Chronic liver diseases; CKD: Chronic kidney disease.

**Figure 1. Distribution of the COVID-19 patients by types of comorbidities**



\*Morbidity (Not-cured) rate was 64.4% on the 14<sup>th</sup> day while it was 6.0% on the 28<sup>th</sup> day

\*Mortality rate (CFR) was 2.3% on the 14<sup>th</sup> day while it was only 2.5% on the 28<sup>th</sup> day

**Figure 2. Distribution of the COVID-19 patients by morbidity & mortality outcomes (On 14<sup>th</sup> & 28<sup>th</sup> day)**

**Table 2. Risk factors associated with morbidity outcome of the COVID-19 patients**

Risk Factors		Morbidity outcome			
		On the 14 <sup>th</sup> day of diagnosis		On the 28 <sup>th</sup> day of diagnosis	
		Cured %	Not cured %	Cured %	Not cured %
Age (Years)	≤59	90.1	89.8	90.8	75.4
	≥60	09.9	10.2	9.2	24.6
Sex	Male	64.4	63.9	63.8	68.9
	Female	35.6	36.1	36.2	31.1
Having comorbidity		32.9	34.4	33.1	45.9
Number of comorbidities	1	69.7	61.3	65.8	46.4
	2	24.4	27.6	25.9	32.1
	≥3	5.9	11.1	8.2	21.4
Current SLT user		4.4	3.7	3.6	9.8
COPD/ Lung diseases		5.8	9.8	7.6	19.7
CKD		1.7	2.3	1.8	6.6
CLD		0.8	1.5	1.0	4.9

SLT: Smokeless tobacco, COPD: Chronic obstructive pulmonary disease; CKD: Chronic kidney disease; CLD: Chronic liver diseases



**Table 3. Risk factors associated with the mortality outcome of the COVID-19 patients**

Risk Factors		Mortality outcome			
		On the 14 <sup>th</sup> day of diagnosis		On the 28 <sup>th</sup> day of diagnosis	
		Survivors %	Non-survivors %	Survivors %	Non-survivors %
<b>Age (Years)</b>	≤59	91.6	39.1	91.0	44.0
	≥60	8.4	60.9	9.0	56.0
<b>Sex</b>	Male	63.4	78.3	63.8	76.0
	Female	36.6	21.7	36.2	24.0
<b>Having comorbidity</b>		32.8	78.3	22.2	80.0
<b>Number of comorbidities</b>	1	63.3	38.9	62.5	40.0
	2	27.5	27.8	37.5	30.0
	≥3	9.2	33.3	0.0	30.0
<b>Current SLT user</b>		3.3	13.0	3.7	12.0
<b>COPD/ Lung diseases</b>		8.7	39.1	7.6	40.0
<b>DM</b>		16.5	39.1	17.2	36.0
<b>CHD</b>		4.0	17.4	3.6	16.0
<b>HTN</b>		13.8	34.8	13.7	36.0
<b>CKD</b>		1.7	17.4	1.7	16.0
<b>CLD</b>		1.1	13.0	1.0	12.0
<b>Malignant diseases</b>		0.6	8.7	0.7	8.0

SLT: Smokeless tobacco, COPD: Chronic obstructive pulmonary disease; DM: Diabetes mellitus; CHD: Coronary heart diseases; HTN: Hypertension; CKD: Chronic kidney disease; CLD: Chronic liver diseases

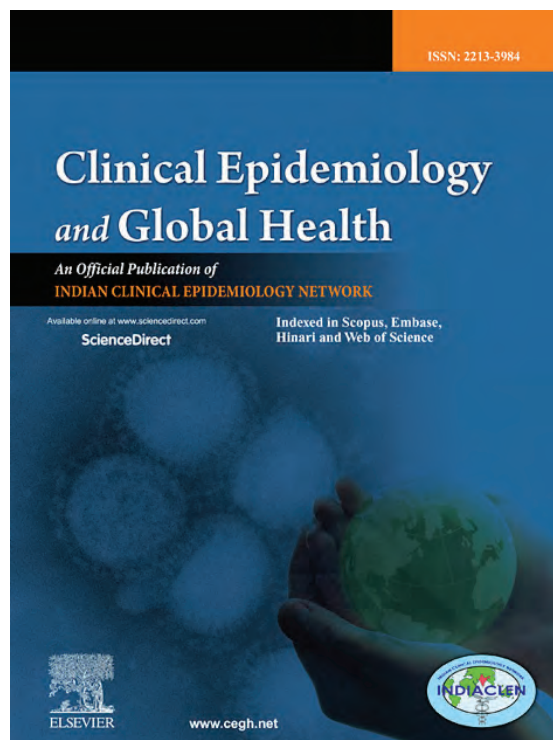
### Policy Recommendations:

- To reduce adverse morbidity and mortality outcomes of COVID-19 patients, national treatment protocol should be adjusted with treatment emphasis for the first 14 days of the disease.
- To overcome untoward 'not-cured' outcome even after 28 days, relevant risk factors must be considered to take effective measures.
- To reduce the morbidity rate, special attention must be paid to the health care of the elderly and comorbid patients.
- To reduce the mortality rate, clinical management must be prioritized for the elderly and comorbid patients.
- To alleviate unexpected outcomes of COVID-19 patients, tobacco use must be prohibited and users should be more cautious regarding clinical conditions and consultation with physicians.
- To avoid unwanted mortality from the COVID-19, hospitals must have adequate facilities for the management of comorbidities like COPD, DM, HTN, CKD, and CLD.
- To minimize the worse outcomes of COVID-19, males, married, elderly, service holders and urban residents should be emphasized for preventive, promotive and curative measures.



## Assessment of occupational health and safety of the health workforce at the health facilities in Bangladesh during COVID-19 pandemic

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### Investigators Details

#### Principal Investigator



**Prof. Dr. Baizid Khorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Dr. Md. Shafiur Rahman**  
Program Coordinator,  
MPH Program, NIPSOM

#### Co-investigator



**Dr. Shahria Sattar**  
Assistant Professor  
(OEH), NIPSOM

#### Co-investigator



**Dr. Md Golam Abbas, PhD**  
Assistant Professor  
(OEH), NIPSOM

#### Co-investigator



**Dr. Farjana Islam**  
Medical Officer, Dept. of  
OEH, NIPSOM

#### Co-investigator



**Dr. Afsana Nazneen**  
Lecturer, Dept. of OEH,  
NIPSOM

#### Co-investigator



**Md. Nuruzzaman**  
NPO, HRH,  
WHO Bangladesh

#### Co-investigator



**Dr. Ashekur Rahman Mullick**  
DGHS, Mohakhali, Dhaka

#### Co-investigator



**Dr. Irin Hossain**  
Asst. Professor & Head,  
Dept. of OEH, NIPSOM



## Assessment of occupational health and safety of the health workforce at the health facilities in Bangladesh during COVID-19 pandemic

B.K. Riaz<sup>1</sup>, M.S. Rahman<sup>2</sup>, S. Sattar<sup>3</sup>, M.G. Abbas<sup>4</sup>, F. Islam<sup>5</sup>, A. Nazneen<sup>6</sup>,  
M. Nuruzzaman<sup>7</sup>, A.R. Mullick<sup>8</sup>, I. Hossain<sup>9</sup>

<sup>1</sup>Director & Head of Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>2</sup>Program Coordinator, MPH Program, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>3</sup>Assistant Professor, Department of Occupational and Environmental Health (OEH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>4</sup>Assistant Professor, Department of Occupational and Environmental Health (OEH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>5</sup>Medical Officer, Department of Occupational and Environmental Health (OEH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>6</sup>Lecturer, Department of Occupational and Environmental Health (OEH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>7</sup>National Professional Officer (NPO), HRH, WHO Bangladesh

<sup>8</sup>Public Health Expert, Directorate General of Health Services (DGHS), Mohakhali, Dhaka

<sup>9</sup>Assistant Professor & Head, Department of Occupational and Environmental Health (OEH), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

### SUMMARY

#### Background:

Occupational health and safety (OHS) is a multidisciplinary field, which is concerned about the safety, health and welfare of people at work. Measures on strengthening OHS at work is critical in a context of highly contagious disease like COVID-19 because no known specific treatment for it is available and therefore, strict adherence to IPC guidelines, policies and procedures are the only recognized effective methods to prevent and control the wide spread of this deadly disease. For the most part, injuries and occupational health hazards are not well studied and recorded for communication with other health care workers. This is specifically true for Bangladesh. Though there is no officially published data, according to different professional bodies and daily newspaper reporting, in Bangladesh a total of 7,660 health workers has been infected as end of August 2020. Allocation of adequate number and quality of Personal Protective Equipment (PPE) to combat with occupational, chemical and psychological hazards have become a challenge not only in Bangladesh but also in many countries around the world. Ensuring occupational health services for safety of healthcare workers has become much urgent than ever. In line with this understanding, in 2021, ‘Assessment of Occupational Health and Safety of the Health Workforce at the Health Facilities in Bangladesh during COVID-19 Pandemic’ was conducted by National Institute of Preventive and Social Medicine (NIPSOM) with the financial assistance of World Health Organization (WHO) to assess the state of occupational health and safety of the health workforce at the health facilities in Bangladesh during COVID-19 pandemic.





## Methods:

A descriptive cross-sectional study having quantitative data collection methods was conducted among 3,376 health workforces (Doctors, Nurses and Medical technologists) working in health facilities (nine medical college hospital from tertiary level) from January to June 2021 considering selection criteria and informed written consent using a multiphase sampling technique. One govt. medical college hospital from each division was selected using simple random sampling technique. As Dhaka division has the highest number, additional medical college hospital from Dhaka division was selected by SRS (simple random sampling). Face to face interview was done from 14<sup>th</sup> March 2021 to 13<sup>th</sup> May 2021 through a semi-structured questionnaire.

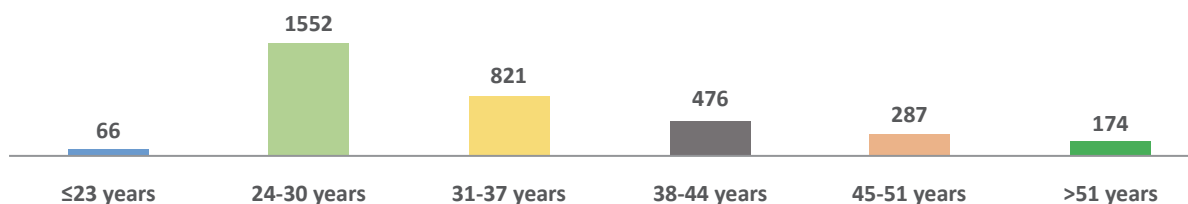
Questionnaire items were selected through a consultation process of the technical expert group and was validated accordingly. Socio-demographic, epidemiological, working environment and workplace violence data and accompanying statistical analyses were performed using Excel and SPSS version 26. An observational checklist was used to assess the institutional environmental condition by “very good-good-average-poor-very poor” category. Quality control of data was ensured, and ethical issues were strictly maintained in all stages of study. No human, physical or social harm was anticipated for conduction of this study and it was continuously tried to ensure enrolled populations’ right for privacy, confidentially and freedom of moment.

## Results (Highlights):

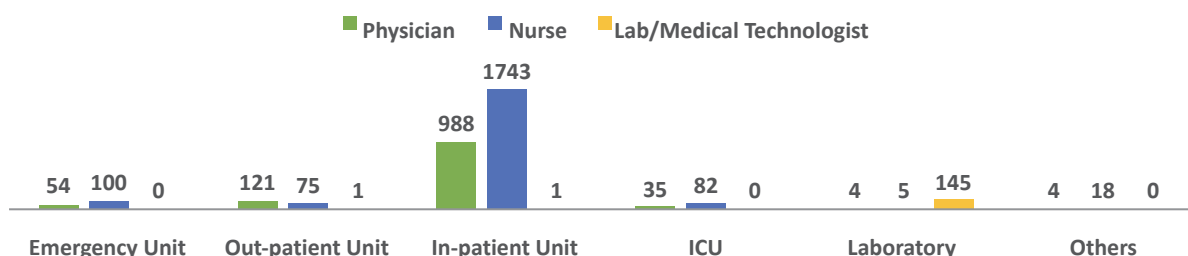
1. Less than half of respondents (44%) said about their sufferings regarding workplace psychological harassment like harassment by patient party (42%), media personnel (9.6%) and by higher authority (9.5%) (Figure 06).
2. A small amount of respondents identified as a case of workplace induced anxiety (8%) and depression (11%) (Figure 07).
3. Among total cases around all (93.3%, physician-93.8%, 1131/1206, nurse-93.8%, 1897/2023, medical technologist-82.3%, 122/147) had history of direct physical contact with a probable case of COVID-19 and (89%, physician-91.5%, 1103/1206, nurse-88%, 1781/2023, medical technologist-83%, 122/147) took direct care of a probable case of COVID-19.
4. In case of face to face contact about four-fifth (80.3%, physician-80.5%, 971/1206, nurse-80.8%, 1635/2023, medical technologist-70.7%, 104/147) and more than half (66.8%, physician-64.6%, 779/1206, nurse-70.7%, 1431/2023, medical technologist-30.6%, 45/147) stayed within 1 meter and for more than 15 minutes respectively.
5. Nearly all of them (99.1%) used to wash hands after contacting with patient and among them more than four-fifth (89%) used alcohol based sanitizers for hand washing. Majority (81.9%) participants used to wash hands before contacting with patient and among them majority used alcohol based sanitizers (73.7%).
6. About four-fifth (83%) of total study population used to wear personal protective equipment (PPE) during interaction with COVID-19 patients (Figure 03).
7. Less than half of respondents always follow the donning (33.6%) and doffing (33.9%) procedure of PPE during interaction of COVID-19 patients as recommendation respectively.
8. Around one fifth (20%) of respondents had training regarding COVID-19 (Figure 04).
9. Less than half (43%) of the respondents agreed about adequate human resource at workplace (Figure 05).
10. About one-fifth (27%) said that they had enough time for rest and recuperation during work (Figure 05). A small amount of people had on duty drinking water service (23%) and on duty meal service (7%) (Figure 05).



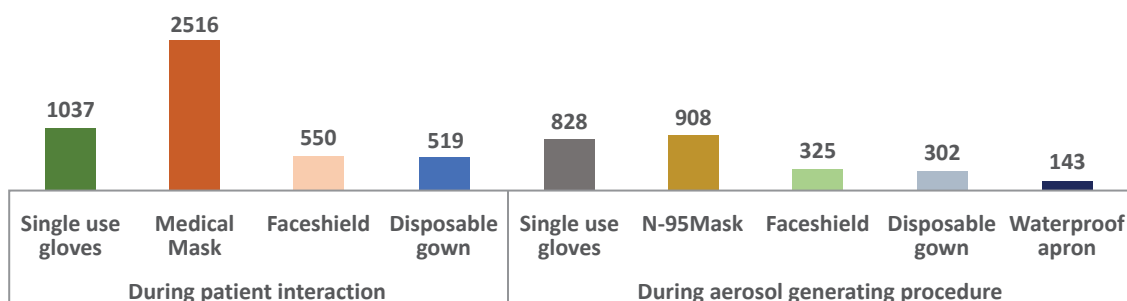
11. Less than half (41%) said that they had managerial committee regarding occupational issues and concerns and health protection act or regulations introduced by government respectively.
12. One-tenth (10%) respondents said that they had occupational risk assessment facility in their workplace.
13. Around a little less than half of respondents (46%) said that they had isolation facility in their workplace followed by quarantine facility and contact tracing facility reported by 42% and 12% respectively.
14. Most of them (86%) said that vaccinations facilities has been available in their workplace followed by facility of reporting workplace accidental exposure (72.7%).
15. Majority (63%) of them agreed about balanced work-home interface in workplace.
16. All the health facilities had toilet, changing room and sanitary room facility including occupational health services for vulnerable population group and had average quality environmental conditions.
17. Majority of them (46%) were in the age group of 24-30 years. Maximum age was 59 years and minimum age was 19 years. Mean age of respondents was  $33.57 \pm 8.573$  years (Figure 01).
18. Majority were female (69.2%); Female were predominant and actual male and female ratio were (1/2.25)
19. Most of them had been working in in-patient unit (36.2%) (Figure 02).



**Figure 01: Distribution of respondents by age**

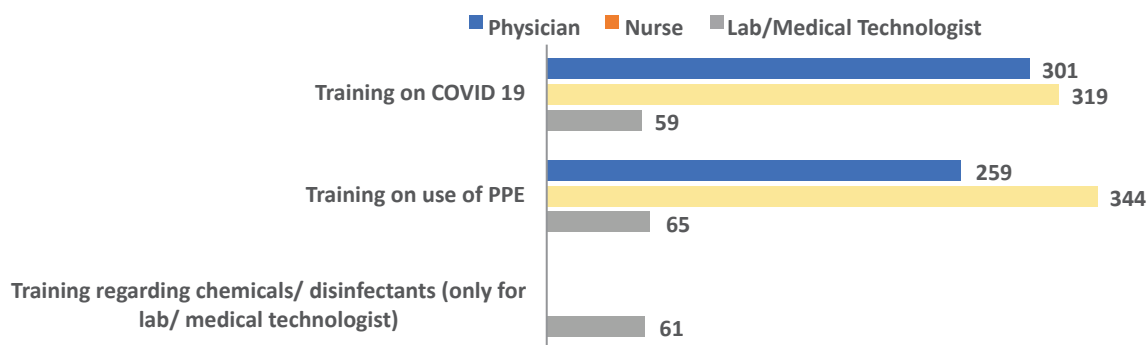


**Figure 02: Distribution of respondents according to the assigned working unit**

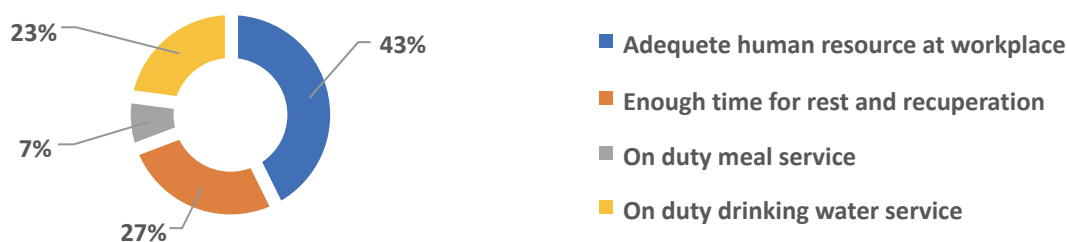


**Figure 03: Distribution of respondents according to their use of PPE**





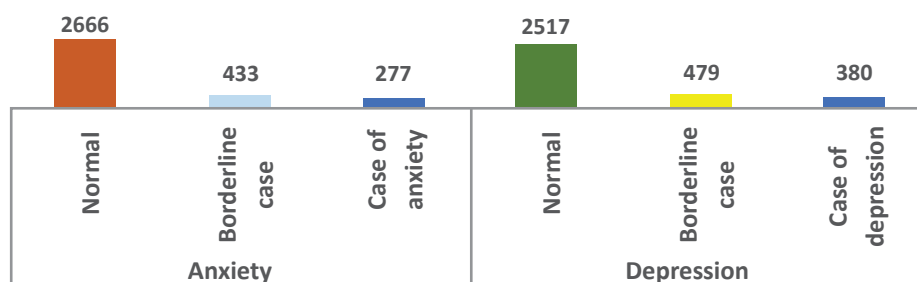
**Figure 04: Distribution of respondents according to their participation in different types of training**



**Figure 05: Distribution of respondents according to different working facilities in their workplace**



**Figure 06: Distribution of respondents according to workplace psychological harassment**



**Figure 07: Distribution of respondents according to hospital to different type of workplace harassment induced anxiety and depression**



### Recommendations:

- Develop linkages between occupational health and safety, patient safety, quality improvement and infection prevention and control programs.
- Include health and safety skills in personal and patient safety into education and training programs for health workforce at all levels.
- Integrate staff safety and patient safety incident reporting and learning systems.
- Promote a culture of zero tolerance to violence against health workforce.
- Establish policies to ensure appropriate and fair duration of deployments, working hours, rest break and minimizing the administrative burden on health workforce.
- Provide access to mental well-being and social support services for health workforce, including advice on work-life balance and risk assessment and mitigation.
- Ensure the implementation of minimum patient safety, infection prevention and control and occupational safety standards in all health facilities across the health system.
- Ensure availability of personal protective equipment (PPE) at all times, as relevant to the roles and tasks performed, in adequate quantity and appropriate fit and of acceptable quality.
- Ensure vaccination of all health workforce at risk against all vaccine-preventable infections, including Hepatitis B and seasonal influenza.

### Health Workforce of NIPSOM during COVID-19 Pandemic



## Severity of COVID-19 reinfection and associated risk factors: findings of a cross-sectional study in Bangladesh

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### Investigators Details

#### Principal Investigator



**Prof. Dr. Md. Ziaul Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

#### Co-investigator



**Prof. Dr. Baizid Khoorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Dr. Shah Ali Akbar Ashrafi**  
Health Information Unit,  
DGHS

#### Co-investigator



**Dr. Syeda Sumaiya Efa**  
USADID's Alliance for  
Combating TB in  
Bangladesh

#### Co-investigator



**Dr. Sharmin Farjana**  
Dept. of OBS & GYN&E,  
Shaheed Suhrawardy  
Medical College Hospital

#### Co-investigator



**Mohammad Adnan Khan**  
Health Information Unit,  
DGH





## Severity of COVID-19 reinfection and associated risk factors: findings of a cross-sectional study in Bangladesh

M.Z. Islam<sup>1</sup>, B.K. Riaz<sup>2</sup>, S.A.A. Ashrafi<sup>3</sup>, S.S. Efa<sup>4</sup>, S. Farjana<sup>5</sup>, M.A. Khan<sup>6</sup>

<sup>1</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>3</sup>Health Information Unit, Directorate General of Health Services (DGHS), Mohakhali, Dhaka-1212, Bangladesh.

<sup>4</sup>Diabetic Association of Bangladesh. USAID's Alliance for Combating TB in Bangladesh, BADAS TB Initiative in Bangladesh

<sup>5</sup>Department of Obstetrics and Gynaecology (OBS & GYNAE), Shaheed Suhrawardy Medical College Hospital, Sher-E-Bangla Nagar, Dhaka, Bangladesh

<sup>6</sup>Health Information Unit, Directorate General of Health Services (DGHS), Mohakhali, Dhaka-1212, Bangladesh

### SUMMARY

#### Introduction:

COVID-19 pandemic has become a threat to the global health affecting millions of people. Bangladesh is also bearing the consequences of this highly contagious disease for the past two years and at recent times COVID-19 reinfection has emerged as a grave issue in our country. COVID-19 reinfection has posed as a threat to the whole population in general leading to a significant number of morbidities and mortality. Information on risk factors associated with reinfection of COVID-19 is very scarce in Bangladesh. This pioneer study thus aimed to identify the risk factors associated with COVID-19 reinfection which will in turn prove to be propitious in prevention and control of further reinfection.

#### Methods:

This current cross-sectional study was conducted during January to June 2021. The patients were identified from Management Information System (MIS) of the Directorate General of Health Services (DGHS), Bangladesh, where COVID-19 patients diagnosed by RT-PCR were reported from any part of the country. We considered all the cases (41408) reported in the May 2021 at the MIS. Followed by, we identified the reinfected patients by reviewing the records of all the reported patients and we found total 474 (1.14%) reinfected cases. Based on the selection criteria, 404 patients were enrolled finally in the study through their voluntary participation. Data were collected by telephone interview and medical record reviewing using a pretested semi-structured questionnaire and a checklist respectively. Data comprised of background characteristics, clinical features, comorbidities and risk factors related to social exposure and preventive practices. Prior to data collection, informed consent was obtained from each participant. Ethical issues were maintained strictly in all stages of the study. Data analysis was done using the SPSS software. Quality control of data and ethical issues were maintained strictly.



### Results (Highlights):

1. The reinfection rate of COVID-19 was 1.14% (Table-2).
2. Majority of the patients were young adults (64.9% aged 20-39 years), males (52%) and married (79.7%) (Table-1).
3. Most of the patients were urban residents (98%) and majority (62.9%) were employed (Table-1).
4. A reasonable segment of the patients (18.8%) had no clinical signs and symptoms of COVID-19 (Table-2).
5. Majority (60.9%) were not vaccinated against COVID-19, while 34.2% received one dose and 5% received two doses of vaccine.
6. Majority (59.5%) patients had an interval of 1-2 months between vaccination and reinfection (Table-3).
7. Majority (74.3%) of the patients attended shops while 90.1% attended friends, neighbors and social gathering (Table-2).
8. Around one third (30.2%) patients attended diverse social gatherings (Table-3).
9. Of all the patients, 23.8% & 37.6% didn't maintain physical distance with family members and outside people respectively (Table-3).
10. Among the patients, 49% used public transports and 38.1% shared utensils (Table-2).
11. Out of all, 24.8% had different comorbidities and 9.4% had single while 15.3% had multiple comorbidities including diabetes mellitus (19.7%), hypertension (13.2%), CVD (2.2%) and COPD (1.6%) (Table-3).
12. A sensible portion of the patients (32%) were tobacco smokers (Table-3).
13. Majority of the patients (63.8%) had an interval of 3-6 months between first attack and reinfection (Table-2).
14. Oxygen saturation was <94% among 19.3% patients and most of the patients (90.6%) were treated at home (Table-2).
15. Post graduate patients had more than 2 times higher social exposure.
16. Male patients were around 3 times more likely to have exposure to religious gatherings (Table-4).
17. The employed patients had more than 5 times more chance of being exposed to COVID-19 patients (Table-4).
18. Male patients were around 4 times less likely to have regular hand washing practice (Table-4).
19. Adults aged 40-59 years were less (0.509 times) likely to avoid public transport than young adults aged 20-39 years (Table-4).
20. The post graduate patients were around 2 times more likely of avoiding public transport (Table-4).



**Table 1. Baseline characteristics of the reinfected COVID-19 patients (n=404)**

Baseline characteristic	Category	Frequency (%)
<b>Age group (Years)</b>	20-39	262 (64.9)
	40-59	142 (35.1)
<b>Sex</b>	Male	210 (52.0)
	Female	194 (48.0)
<b>Marital status</b>	Ever married	332 (82.2)
	Unmarried	72 (17.8)
<b>Education</b>	Up to graduate	280 (69.3)
	Post-graduate	124 (30.7)
<b>Occupation</b>	Employed	330 (62.9)
	Health workers	150 (37.1)
	Business	62 (15.3)
	Other services	118 (29.2)
	Unemployed	150 (37.1)
<b>Type of family</b>	Nuclear	324 (80.2)
	Joint	80 (19.8)
<b>Place of residence</b>	Rural	08 (2.0)
	Urban	396 (98.0)
<b>Crowding Index</b>	Normal	324 (80.2)
	Overcrowding	80 (19.8)
<b>Monthly family income (Tk.)</b>	15000-49000	104 (25.7)
	50,000-200000	300 (74.3)

**Table 2. Distribution of reinfected COVID-19 patients by clinical attributes**

Clinical attribute	Category	Frequency (%)
<b>Rate of reinfection</b>	Out of 41408 cases	473 (1.14)
<b>Having Symptoms (n=404)</b>	Yes	328 (81.2)
	No	76 (18.8)
<b>Oxygen saturation (n=404)</b>	<94%	78 (19.3)
	≥94%	326 (80.7)
<b>Interval between first and second attack (Month) (n=404)</b>	3-6	258 (63.8)
	7-12	146 (36.2)
<b>Place of treatment (n=404)</b>	Home	366 (90.6)
	Hospital	38 (9.4)
<b>Duration of isolation (Days) (n=390)</b>	<14	34 (8.7)
	≥14	356 (91.3)



**Table 3. Distribution the patients by risk factors of COVID-19 reinfections (n=404)**

Category	Risk factors	f (%)
<b>*Exposure related</b>	Attended grocery store or pharmacy	300 (74.3)
	Attended friends, neighbor or relatives	364 (90.1)
	Attended social gathering	202 (50.0)
	Attended political gathering	60 (14.9)
	Attended religious gathering	122 (30.2)
	Didn't maintain physical distance with family members	96 (23.8)
	Didn't maintain physical distance with outside people	152 (37.6)
	Exposed to Covid-19 patients	114 (28.2)
	Attended workplace regularly	334 (82.7)
<b>*Preventive practice related</b>	Didn't use mask during outdoor activities	08 (2.0)
	Didn't use mask on attending people	04 (1.0)
	Didn't wash hand properly	30 (7.3)
	Didn't use hand sanitizer	84 (20.8)
	Shared utensils	198 (49.0)
	Used public transport	154 (38.1)
<b>*Comorbidities</b>	Having comorbidities	100 (24.8)
	Single comorbidity	38 (9.4)
	Multiple comorbidity	62 (15.3)
	CVD	08 (2.2)
	HTN	50 (13.7)
	DM	70 (19.2)
	COPD	06 (1.6)
	Hypothyroid	12 (3.3)
	Tobacco use	130 (32.2)
<b>Vaccination</b>	Not vaccinated against COVID-19	246 (60.9)
	One dose	138 (34.1)
	Two doses	20 (5.0)

\* Multiple responses



**Table 4. Logistic regression of risk factors of COVID-19 reinfection**

Socio-demographic characteristics		Regression coefficient (B)	OR	95% CI for OR		Significance (p<0.05)
				Lower	Upper	
Social exposure						
Education	Graduate and below	Reference				
	Post-graduate	0.827	2.287	1.233	4.243	0.009*
Religious exposure						
Gender	Female	Reference				
	Male	1.113	3.044	1.600	5.790	0.001 *
Exposure to COVID-19 patient						
Occupation	Unemployed	Reference				
	Employed	1.707	5.514	1.621	18.758	0.006*
Regular workplace exposure						
Education	Graduate and below	Reference				
	Post-graduate	1.228	3.413	0.934	12.476	0.063
Hand washing						
Gender	Female	Reference				
	Male	1.411	3.906	1.724	8.849	0.996
Avoided public transport						
Age group	Young adult (20-39)	Reference				
	Adult (40-59)	-0.675	0.509	0.273	0.948	0.033 *
Education	Graduate and below	Reference				
	Post-graduate	0.686	1.985	1.036	3.805	0.039*

\* Significant at p<0.05 level with 95% CI

### Policy Recommendations:

- To prevent COVID-19 reinfection, vaccination coverage should be increased through awareness raising and ensuring vaccine availability.
- To reduce the reinfection, previously COVID-19 infected individuals having comorbidity must be prioritized to adopt preventive and protective measures.
- To control COVID-19 reinfection, previously infected individuals should be encouraged to avoid social exposures like shopping, attending social and religious gatherings, visiting friends and relatives.
- To mitigate the reinfections of COVID-19, previously infected employed individuals must be careful about limited use of public transports and attending workplace regularly.
- To prevent the coinfection, young adults specially the males should be emphasized regarding preventive measures including social distancing, use of personal protective devices, hand sanitization and exposure to social gatherings.
- To control the severity of reinfection, special attention must be paid to the individuals having graduation and below education, multiple comorbidities and lower-middle income family.
- To explore more realistic picture on re-infections of COVID-19, well-designed studies on the natural history including its immunogenicity, susceptibility and severity could be conducted.





## Health-related quality of life of the adult COVID-19 patients following one-month illness experience since diagnosis: findings of a cross-sectional study in Bangladesh

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RESEARCH ARTICLE

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Md. Ziaul Islam ✉, Baizid Koorshid Riaz ✉, Syeda Sumaiya Efa ✉, Sharmin Farjana ✉, Fahad Mahmood ✉

### Investigators Details

#### Principal Investigator



**Prof. Dr. Md. Ziaul Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

#### Co-investigator



**Prof. Dr. Baizid Koorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Dr. Syeda Sumaiya Efa**  
USADID's Alliance for  
Combating TB in  
Bangladesh

#### Co-investigator



**Dr. Sharmin Farjana**  
Dept. of OBS & GYNAE,  
Shaheed Suhrawardy  
Medical College Hospital

#### Co-investigator



**Dr. Fahad Mahmood**  
Lecturer, Dept. of CM,  
NIPSOM



## **Health-related quality of life of the adult COVID-19 patients following one-month illness experience since diagnosis: findings of a cross-sectional study in Bangladesh**

M.Z. Islam<sup>1</sup>, B.K. Riaz<sup>2</sup>, S.S. Efa<sup>3</sup>, S. Farjana<sup>4</sup>, F. Mahmood<sup>5</sup>

<sup>1</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka

<sup>3</sup>Diabetic Association of Bangladesh. USAID's Alliance for Combating TB in Bangladesh, BADAS TB Initiative in Bangladesh

<sup>4</sup>Department of Obstetrics and Gynaecology (OBS & GYNAE), Shaheed Suhrawardy Medical College Hospital, Sher-E-Bangla Nagar, Dhaka, Bangladesh

<sup>5</sup>Lecturer, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM) Mohakhali, Dhaka, Bangladesh

### **SUMMARY**

#### **Background:**

Coronavirus disease 2019 (COVID-19) was declared as a global emergency on the 30th January 2020 and as a pandemic on the 11<sup>th</sup> March 2020 by World Health Organization (WHO). Several extreme public health measures like home confinement, the lockdown of cities, limited human mobility, an extension of national holidays and closure of academic institutions, etc. were adopted worldwide. In addition, diverse medical measures like isolation, quarantine and hospitalization, etc. were espoused to prevent transmission of COVID-19 and to minimize the health effects of the patients. The illness caused by the diseases along with various restrictions posed a negative impact on daily living, social participation, health and quality of life of the patients. Despite different public health interventions, both physical and mental health of the COVID-19 patients were impaired. The present study intended to assess the health related quality of life (HRQOL) of adult COVID-19 patients in respect of physical and mental illness in the local context of Bangladesh. The study examined the quality of life quantitatively in terms of duration of physical health, mental health and limitation of health-related activities.

#### **Methods:**

This cross sectional study was conducted at the National Institute of Preventive and Social Medicine (NIPSOM), Bangladesh during the period from June to November 2020. All the COVID-19 patients diagnosed by real-time reverse transcriptase-polymerase chain reaction (RT-PCR) assay at the central laboratory of NIPSOM in July 2020 formed the sampling frame. The NIPSOM laboratory diagnosed a total of 1342 COVID-19 patients in July 2020. Based on the selection criteria, the study enrolled 1204 adult (aged >18 years) COVID-19 patients who completed a one-month duration of illness after being RT-PCR positive. The patients were interviewed with the CDC HRQOL-14 questionnaire to assess their HRQOL. Data were collected by telephone-interview and reviewing medical records using a semi-structured questionnaire and checklist respectively. Data analysis was done using the SPSS software. Quality control of data and ethical issues were maintained strictly.



## Results (Highlights):

1. Among 1204 COVID-19 patients, around three-fourth (72.3%) of patients were male and the rest 27.7% were female (Table 1).
2. Around half (49.3%) of the patients was in the age group 30–49 years followed by 20.8% belonged to the age group 20–29 years (Table 1).
3. Almost equal numbers (49.8% vs. 50.2%) of patients were from urban and rural areas (Table 1).
4. More than two-third (67.5%) were from a nuclear family (Table 1).
5. Concerning symptoms, 88.6% of the patients had symptoms (Table-1).
6. Among them, 86% had fever, 59% had cough, 41% had sore throat and 38.2% had anosmia (Figure-1).
7. Among all the patients, 35.5% had different comorbidities (Table-1).
8. Comorbidities included hypertension (55.6%), diabetes mellitus (55.6%), ischemic heart disease (16.4%), and lung disease (12.4%) (Figure-2).
9. The general health condition was ‘good’ in 70.1% and it was ‘not so good’ in 29.8% of the patients (Table-2).
10. The majority (87%) of the patients needed help for personal care, and 47.8% required assistance for routine needs (Table-2).
11. The average duration of physical illness was 9.83 days and of mental illness was 7.97 days (Table 2).
12. The average duration of limited health-related activity was 11.39 days (Table 2).
13. The average duration of healthy days was significantly lower in the ever-married (11.24 days) group and in the patients having a symptom (11.96 days) and comorbidity (12.23 days) (Table 3).
14. The average duration of usual activity limitation was significantly higher in the age group 50-59 years (7.88 days), in the patients having a symptom (7.94 days) and comorbidity (7.88 days) (Table 3).
15. The average duration of limited health-related activity was significantly higher in the males (11.75 days) and the patients having a symptom (12.23 days) (Table 3).
16. The average duration of 'feeling pain' was significantly associated with the presence of a symptom (4.33 days) and having a comorbidity (5.28 days) (Table 4).
17. The average duration of ‘feeling sad, blue or depressed’ was significantly higher in ever married patients (10.47 days), in the patients having a symptom (7.58 days) and a comorbidity (8.04 days) (Table 4).
18. The average duration of ‘feeling worried’ was significantly associated with gender (male=6.48 days and female=7.53 days), having a symptom (7.26 days) and ever married patients (10.12 days) (Table 4).
19. The average duration of ‘not getting enough rest’ was significantly higher in females (5.26 days), and patients having a symptom (4.69 days) and a comorbidity (5.02 days) (Table 4).
20. The average duration of ‘feeling very healthy’ was significantly lower in the age group 50-59 years (13.24 days), in the patients having a symptom (13.51 days) and a comorbidity (13 days) (Table 4).

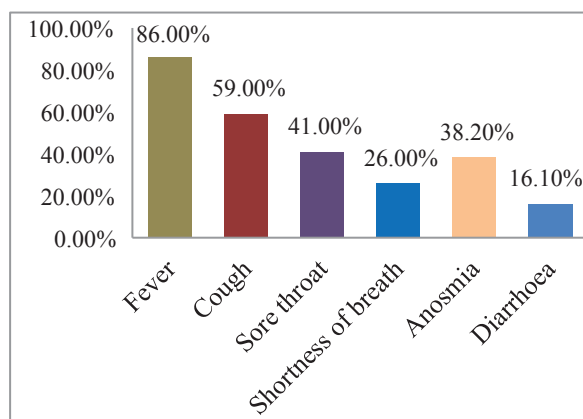


**Table 1. Baseline characteristics of the COVID-19 patients**

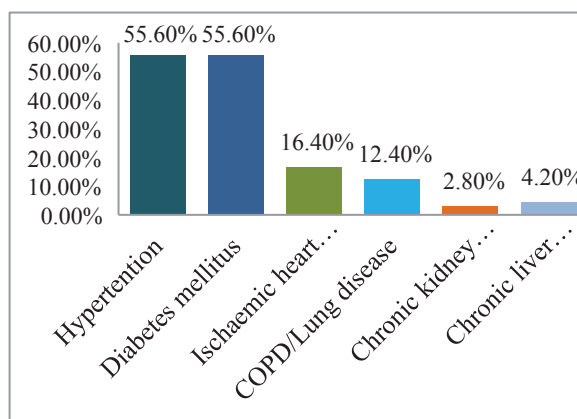
Baseline characteristic	Category	Percentage, %
Age (Years)	20-29	20.8
	30-49	49.3
	50-59	18.9
	60-90	11.0
Sex	Male	72.3
	Female	27.7
Marital status	Unmarried	14.4
	Currently married	82.8
	Ever married	2.8
Education	Illiterate and primary	25.7
	Secondary	31.3
	Higher secondary	17.9
	Graduation and above	25.1
Place of residence	Rural	49.8
	Urban	50.2
Type of family	Nuclear	67.5
	Joint	32.5
Monthly family income (Tk.)	5000-20000	41.7
	21000-50000	48.3
	51000-200000	10.0
Presence of symptom	Yes	88.6
	No	11.4
Presence of comorbidity	Yes	35.5
	No	64.5

Ever married=Widowed / Widower / Separated / Divorced

**Figure 1. Distribution of the COVID-19 patients by symptoms (n = 1067)**



**Figure 2. Distribution of the COVID-19 patients by comorbidities (n=428)**



**Table 2. Distribution of different items of health-related quality of life of the COVID-19 patients (based on CDC HRQOL-14)**

<b>Items of healthy days core module</b>	
Patient's general health condition (Good), n (%)	845 (70.1)
Patient's general health condition (Not so good), n (%)	359 (29.8)
Duration of physical illness (Mean $\pm$ SD days)	9.83 ( $\pm$ 7.09)
Duration of mental illness (Mean $\pm$ SD days)	7.97 ( $\pm$ 8.12)
Duration of usual activity limitation (Mean $\pm$ SD days)	7.04 ( $\pm$ 5.53)
<b>Items of activity limitations module</b>	
Duration of health related limited activity (Mean $\pm$ SD days)	11.39 ( $\pm$ 9.29)
Need help for personal care, n (%)	1047 (87.0)
Need help for routine needs, n (%)	576 (47.8)
<b>Items of healthy days symptoms module</b>	
Duration of hard to do usual activities due to pain (Mean $\pm$ SD days)	3.88 ( $\pm$ 7.01)
Duration of feeling sad or depressed (Mean $\pm$ SD days)	7.04 ( $\pm$ 8.07)
Duration of feeling worried (Mean $\pm$ SD days)	6.77 ( $\pm$ 8.03)
Duration of not getting enough rest (Mean $\pm$ SD days)	4.38 ( $\pm$ 6.79)
Duration of feeling healthy (Mean $\pm$ SD days)	14.83 ( $\pm$ 9.49)

**Table 3. Mean  $\pm$  SD duration of selected items of HRQOL by baseline and clinical attributes of the COVID-19 patients (n=1204)**

<b>Attributes</b>		<b>Duration of healthy days</b>	<b>Duration of usual activity limitation</b>	<b>Duration of health-related limited activity</b>
<b>Age (Years)</b>	20-29	14.88(10.13) <sup>a</sup>	6.12(5.00) <sup>a</sup>	11.09(9.56) <sup>a</sup>
	30-49	13.88(9.69)	7.06(5.64)	11.80(9.33)
	50-59	12.96(9.62)	7.88(5.85)*	11.34(8.98)
	60-90	12.19(10.01)	7.26(5.26)	10.17(9.06)
<b>Sex</b>	Male	13.88(9.71)	7.14(5.35)	11.75(9.31)*
	Female	13.33(10.13)	6.78(5.99)	10.44(9.18)*
<b>Marital status</b>	Unmarried	15.61(10.16) <sup>a</sup>	6.34(5.41) <sup>a</sup>	11.86(9.75) <sup>a</sup>
	Currently married	13.48(9.76)*	7.19(5.59)	11.38(9.26)
	Ever married	11.24(9.03)*	6.09(4.25)	9.12(7.31)
<b>Having symptom</b>	Yes	11.96(8.84)*	7.94(5.23)*	12.23(9.08)*
	No	27.45(5.25)*	0.0(0)*	4.82(8.20)*
<b>Having comorbidity</b>	Yes	12.23(9.78)*	7.88(5.97)*	10.88(9.30)
	No	14.55(9.76)*	6.57(5.23)*	11.66(9.28)

\* Significant at p<0.05 level with 95% CI

<sup>a</sup> Reference category

Ever married=Widowed / Widower / Separated / Divorced





**Table 4. Mean ( $\pm$ SD) duration of selected items of HRQOL by baseline and clinical attributes of the COVID-19 patients (n=1204)**

Attributes		Feeling pain (Mean $\pm$ SD)	Feeling sad/ blue/ depressed (Mean $\pm$ SD)	Feeling worried (Mean $\pm$ SD)	Not getting enough rest (Mean $\pm$ SD)	Feeling very healthy (Mean $\pm$ SD)
Age (Years)	20-29	2.94(6.25) <sup>a</sup>	6.39(7.59) <sup>a</sup>	6.20(7.41) <sup>a</sup>	4.16(6.61) <sup>a</sup>	16.07(9.63) <sup>a</sup>
	30-49	3.92(6.97)	6.98(7.90)	6.77(7.89)	4.66(7.13)	15.14(9.25)
	50-59	4.59(7.27)	7.20(8.30)	6.90(8.36)	3.83(5.86)	13.24(9.37)*
	60-90	4.28(7.89)	8.28(9.18)	7.59(9.14)	4.53(7.05)	13.80(10.08)
Sex	Male	3.69(6.67)	6.86(7.95)	6.48(7.90)	4.05(6.35)*	15.03(9.43)
	Female	4.40(7.80)	7.51(8.37)	7.53(8.33)*	5.26(7.76)*	14.03(9.62)
Marital status	Unmarried	2.83(6.38) <sup>a</sup>	5.92(7.04) <sup>a</sup>	5.57(6.80) <sup>a</sup>	3.64(6.22) <sup>a</sup>	16.37(9.60) <sup>a</sup>
	Currently married	4.08(7.13)	7.12(8.18)	6.86(8.16)	4.46(6.83)	14.64(9.48)
	Ever married	3.38(5.83)	10.47(8.85)*	10.12(9.06)*	5.82(8.12)	12.53(8.25)
Having symptom	Yes	4.33(7.28)*	7.58(8.19)*	7.26(8.20)*	4.69(6.89)*	13.51(8.74)*
	No	0.39(2.17)*	2.86(5.56)*	2.91(5.17)*	2.01(5.43)*	25.05(8.84)*
Having co-morbidity	Yes	5.28(8.29)*	8.04(8.51)*	7.36(8.34)	5.02(7.32)*	13.0(9.86)*
	No	3.12(6.06)*	6.49(7.77)*	6.44(7.84)	4.03(6.45)*	15.84(9.13)*

\* Significant at  $p < 0.05$  level with 95% CI

<sup>a</sup> Reference category

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### Policy recommendations:

- To ensure health related quality of life (HRQOL) of the COVID-19 patients, healthcare services must be devised to improve both of their physical and mental health.
- The national guidelines for clinical management of COVID-19 patients should be revised based on the factors associated with the HRQOL of the patients as revealed by the present study.
- To reduce the adverse effects on the mental health of COVID-19 patients, recovered patients must be followed-up with a schedule to assess their mental health state and.
- To avoid unwanted consequences of COVID-19, hospitals must have adequate facilities for the management of both physical and mental health problems of COVID-19 patients.
- To minimize the worse physical and mental health outcomes of COVID-19, specific intervention should be invented following the determinants of physical illness, mental illness and the limitation of daily activities of the COVID-19 patients.
- To ensure a healthy life of the COVID-19 patients, special attention should be given to the vulnerable groups like elderly and the patients having a symptom and comorbidity.
- Health related quality of life (HRQOL) and its determinants should be incorporated in the national guidelines for effective management of COVID-19 patients in the context of Bangladesh.



## **Clinical laboratory findings corresponding with COVID-19 infection: a comparison between urban slum and non-slum dwellers**

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### **Investigators Details**

#### **Principal Investigator**



**Prof. Dr. Baizid  
Khoorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### **Co-investigator**



**Dr. Fahmida Khanam**  
Associate Professor  
(Virology), NIPSOM

#### **Co-investigator**



**Dr. Irfan Nowroze Noor**  
Assistant Professor  
(EPID), NIPSOM

#### **Co-investigator**



**Dr. Fahad Mahmood**  
Lecturer  
Dept. of CM, NIPSOM



## **Clinical laboratory findings corresponding with COVID-19 infection: a comparison between urban slum and non-slum dweller**

B.K. Riaz<sup>1</sup>, F. Khanam<sup>2</sup>, I.N. Noor<sup>3</sup>, F. Mahmood<sup>4</sup>

<sup>1</sup>*Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh*

<sup>2</sup>*Associate Professor, Department of Parasitology (PAR), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh*

<sup>3</sup>*Assistant Professor, Department of Epidemiology (EPID), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh*

<sup>4</sup>*Lecturer, Department of Community Medicine (CM), NIPSOM, Mohakhali, Dhaka, Bangladesh*

### **SUMMARY**

#### **Introduction**

The country has accounted a severe disruption in health service delivery process and in economy after declaration of COVID-19 in March 2020. During the time the most suspected vulnerable people were those within poverty line. Eventually the observation showed the difference in prevalence between the slum and non-slum people in Bangladesh. This study was aimed to identify variation in clinical laboratory findings between COVID-19 positive and negative respondents from slum and non-slum dwellers that may have role in disease initiation, progression, severity and outcome as well as a determinant of immunity that made slum dwellers more seropositive for IgG and/or IgM than urban non-slum dwellers. ‘Clinical Laboratory Findings Corresponding with COVID-19 infection: A Comparison between Urban Slum and Non-Slum Dwellers’ is conducted by National Institute of Preventive and Social Medicine (NIPSOM) with the financial assistance of Directorate General of Health Services (DGHS) of Ministry of Health and Family Welfare (MOH&FW).

#### **Methods:**

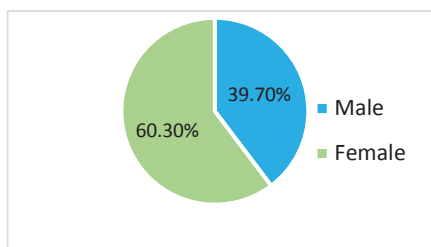
A cross-sectional comparative study was done within a period of April 2021 to July 2021 with 2:1 ratio, among symptomatic or in close contact non-slum (425) and slum (204) dwellers of Dhaka city aging minimum 16 years to maximum 88 years. After getting the written informed consent paper, considering inclusion and exclusion criteria, data were collected through pretested questionnaire by trained data enumerators from May to June 2021. Ethical approval for the study was taken from BMRC. Sample was collected after getting consent and pre-collection counselling with the respondents by the trained technologists. Over phone interview was done for the understanding of disease progression and outcome among the positive cases after 21 days of their face-to-face interview. Considering COVID-19 situation, all the necessary precautions for both data enumerators and respondents were taken. Differential and multivariate analysis along with necessary statistical tools were also used for this purpose. For quality assurance, the study manual was followed in the whole process and the utmost confidentiality of the data was maintained. Supervision by research team at field level was also ensured. Socio-demographic, epidemiological, clinical and laboratory data and accompanying statistical analysis were performed using Excel and SPSS version 23. Quality control of data was ensured and ethical issues were strictly maintained in all stages of survey.



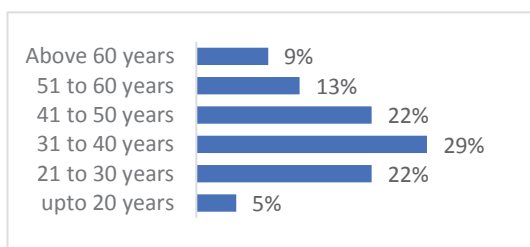
### Key Findings:

1. Positive result of RT-PCR test for COVID-19 found among non-slum respondents (16.7%) was 2.73 times higher than slum respondents (6.8%). (Table-2)
2. Fever (64.6%), body-ache (58.1%), headache (56.9%) and cough (53.9%) were the major symptoms among the slum dwellers. Again cough (72%), fever (66.9%), headache (56.1%) and body-ache (53.5%) were the most common symptoms among the participants of non-slum area.
3. Among affected slum dwellers, 60.7% had taken home management but 39.3% did not take any medication. None of them was needed to be hospitalized. (Table-2)
4. Only 8.8% of affected non-slum residents required hospitalization and all of them recovered without oxygen or intensive care unit treatment, whereas 91.2% of them were treated at home with home management and medication. (Table-2)
5. Male slum residents were more likely to have anemia (34.4%) than non-slum residents (29.4%). However, among female respondents, those who did not live in slums were found to suffer more in anemia (39.5%) than those who live in slum (36%). Yet, these changes were not statistically significant in any of the cases. (Table-2)
6. Among COVID-19 positive individuals, anemia was more common in male participants in slum areas (approximately 50%), whereas it was more common in female participants in non-slum areas (53.8%). (Table-2)
7. Vitamin D deficiency was found more among the respondents of slum (76.5%) area than non-slum area (59.6%) and this difference was statistically significant ( $p=0.036$ ). (Table-2)
8. Undesirable HDL was found in respondents of both slum and non-slum area irrespective of their type of resident and gender (more than 50%). (Table-2)
9. Respondents were identified COVID-19 positive even though their triglyceride level was within acceptable range in male irrespective of their residence. But in case of non-slum female dwellers COVID-19 was more prevalent among respondents with higher triglyceride level.
10. Positive V1 antibody was found 1.47 times higher among non-slum dwellers (53.2%) than slum dwellers (43.5%). (Table-2)
11. The percentage of non-slum residents (36.1%) with positive V2 antibodies was 1.82 times greater than that of slum dwellers (23.7%). (Table-2)
12. In slum area 10.8% and in non-slum area 12.9% participants were diabetic. (Table-2)
13. 5.9% of the slum residents had received the first dosage of the COVID-19 vaccination and 2.4% had received both the first and second doses. (Figure-4)
14. 24.5% and 21.6% of non-slum residents had received one dose and two doses of the COVID-19 vaccination respectively. (Figure-5)





**Figure 1: Distribution of the respondents according to their gender**



**Figure 2: Distribution of the respondents according to their age group**

**Table 1. Baseline characteristics of the study participants**

Baseline characteristic	Category	Slum (percentage)	Non-slum (percentage)
Age group (in years)	Up to 20 years	3.5	6.9
	21 to 30 years	20.7	26.0
	31 to 40 years	31.1	25.0
	41 to 50 years	20.7	25.5
	51 to 60 years	13.2	11.3
	Above 60 years	10.8	5.4
Sex	Male	30.1	59.8
	Female	69.9	40.2
Marital status	Unmarried	7.1	19.6
	Married	81.2	75.0
	Separated/ Divorced	0.7	1.0
	Widow / widower	11.1	4.4
Education	No formal education	42.1	4.4
	Less than primary	19.3	7.8
	Primary completed	21.6	18.1
	Secondary completed	8.5	13.2
	Higher secondary completed	3.8	15.7
	University/college completed	3.1	16.7
	Post-graduation completed	1.6	24.0
Occupation (top 5 categories only)	Housewife	33.9	21.1
	Private employee	9.4	38.2
	Housemaid	15.3	3.4
	Small Business	9.9	7.8
	Unemployed (Unable to work)	5.2	2.5
	Unemployed (Enable to work)	4.2	1.5
Family Type	Nuclear	65.4	75.0
	Joint	34.6	25.0
Comorbidities (Most commonly found categories, Multiple response, in Slum-138, Nonslum-65 respondents)	DM	44.9	44.6
	HTN	50.7	47.7
	COPD	2.2	6.2
	Asthma	17.4	13.8
	Heart disease	21.7	15.4
	Kidney disease	3.6	4.6
	Other co-morbidity	5.1	9.2

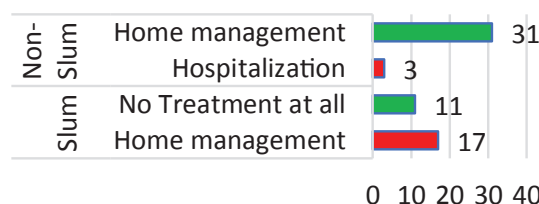




**Table 2. Distribution of lab findings according to slum vs non-slum respondents**

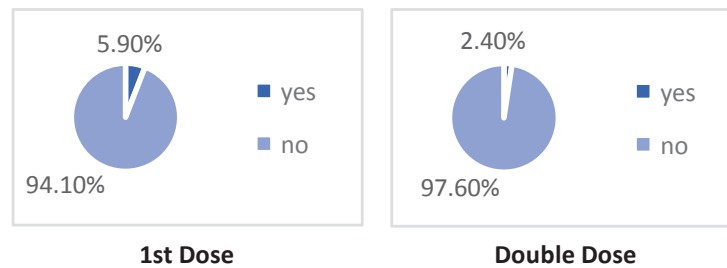
Baseline characteristic	Category		Slum	Non-slum	P value
<b>RT-PCR COVID-19 test</b>	Positive		29 (6.8%)	34 (16.7%)	0.000* OR=2.73
	Negative		396 (93.2%)	170 (83.3%)	
<b>Treatment modality</b>	Hospitalization		0	3 (8.8)	
	Home management		17 (60.7%)	31 (91.2%)	
	No Treatment at all		11 (39.3%)	0	
<b>Anemia</b>	Male	Anemic (< 14 g/dl)	44 (34.4%)	35 (29.4%)	0.484
		Normal (≥ 14 g/dl)	84 (65.6%)	84 (70.6%)	
	Female	Anemic (< 12 g/dl)	107 (36%)	32 (39.5%)	0.656
		Normal (≥ 12 g/dl)	190 (64%)	49 (60.5%)	
<b>Vitamin-D</b>	Deficient (Lowest thru 19.99 IU)		316 (76.5%)	118 (59.6%)	0.000*
	Insufficient (20-29.99 IU)		77 (18.6%)	55 (27.8%)	
	Optimal (30-50.99 IU)		17 (4.1%)	20 (10.1%)	
	51.00 thru highest IU		3 (0.7%)	5 (2.5%)	
<b>Triglyceride</b>	Acceptable (Lowest thru 149 mg/dl)		151 (35.5%)	85 (41.7%)	0.036*
	Borderline high (150-200 mg/dl)		72 (19.9%)	43 (21.1%)	
	High (201-499 mg/dl)		167 (39.3%)	69 (33.8%)	
	Very high (500 thru highest mg/dl)		35 (8.2%)	7 (3.4%)	
<b>HDL</b>	Male	Undesirable (< 40 mg/dl)	66 (51.6%)	76 (62.3%)	0.242
		From 40 to 60 mg/dl	57 (44.5%)	42 (34.4%)	
		Desirable (> 60 mg/dl)	5 (3.9%)	4 (3.3%)	
	Female	Undesirable (< 50 mg/dl)	224 (75.4%)	60 (73.2%)	0.344
		From 50 to 60 mg/dl	57 (19.2%)	14 (17.1%)	
		Desirable (> 60 mg/dl)	16 (5.4%)	8 (9.8%)	
<b>Fasting blood sugar</b>	Hypoglycemia (Lowest thru 4.1 mmol/L)		98 (23.1%)	1 (0.5%)	0.000*
	Reference value (4.2-6.4 mmol/L)		254 (59.8%)	163 (80.7%)	
	Borderline high (6.5-7.7 mmol/L)		27 (6.4%)	12 (5.9%)	
	Diabetic (7.8 mmol/L thru highest)		46 (10.8%)	26 (12.9%)	
<b>V1 antibody</b>	Positive		184 (43.5%)	108 (53.2%)	0.028*
	Negative		239 (56.5%)	95 (46.8%)	OR=1.47
<b>V2 antibody</b>	Positive		100 (23.7%)	73 (36.1%)	0.002*
	Negative		322 (76.3%)	129 (63.9%)	OR=1.82

\* Significant at p<0.05 level with 95% CI

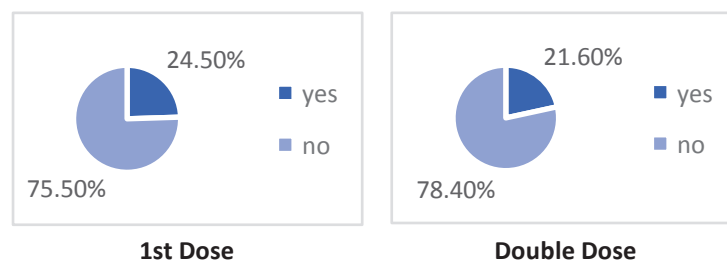


**Figure 3: Distribution of the respondents according to their treatment modality**





**Figure 4: Distribution of vaccination among the slum respondents**



**Figure 5: Distribution of vaccination among the non-slum respondents**

#### Recommendations:

- The study shows among the respondents there is a difference in disease initiation, progression, severity and outcome as well as a determinant of immunity between slum and non-slum dwellers in response to the COVID-19. This result enlightens us that a common design for all can't be the solution, this is applicable not only in COVID-19 but also in any other unexpected health related events. The concern authority (Ministry of Health and Family welfare/ City corporation etc.) must consider this variation during planning of any health-related program for the Dhaka city residents.
- The results clearly show scenario of undesirable Lipid profile, Vitamin D deficiency and more than one in ten suffering from diabetes irrespective of type of residence. Life-style modification, increase physical activity and change of food habit are the prior concern for the planning of health-related programs when the target population is the Dhaka city residents.
- Dhaka city needs a design which offer the people more physical activity to fight against both existing challenge and future burden of non-communicable disease.



## Characterization of microbial infection among SARS-CoV-2 infected patients in a COVID-19 dedicated tertiary care hospital of Bangladesh

**Publication Status:** Under Process

### Investigators Details

#### Principal Investigator



**Dr. A N M Shamsul Islam**  
Associate professor  
(PH&HA), NIPSOM

#### Co-investigator



**Dr. Fahmida Khanam**  
Associate Professor  
(Virology), NIPSOM

#### Co-investigator



**Dr. Nasreen Farhana**  
Associate Professor  
(Microbiology), NIPSOM

#### Co-investigator



**Dr. Naznin Akter Jahan**  
Assistant Professor  
(Biochemistry), NIPSOM

#### Co-investigator



**Dr. Rafaat Choudhury**  
Assistant Professor  
(Microbiology), NIPSOM

#### Co-investigator



**Dr. Mohammad Jamal Uddin**  
Assistant Professor  
(Virology), NIPSOM

#### Co-investigator



**Dr. Fatima Nasreen**  
Medical Officer,  
Dept. of BIOS, NIPSOM

#### Co-investigator



**Dr. Md. Nazmul Hassan Refat**  
Assistant Professor  
(PH&HA), NIPSOM



## Characterization of microbial infection among SARS-CoV-2 infected patients in a COVID-19 dedicated tertiary care hospital of Bangladesh

A.N.M.S. Islam<sup>1</sup>, F. Khanam<sup>2</sup>, N. Farhana<sup>3</sup>, N.A. Jahan<sup>4</sup>, R. Choudhury<sup>5</sup>, M.J. Uddin<sup>6</sup>,  
F. Nasreen<sup>7</sup>, M.N.H. Refat<sup>8</sup>

<sup>1</sup>Associate professor, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Associate Professor, Department of Entomology (ENTO), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>3</sup>Associate Professor, Department of Microbiology and Mycology (MICRO & MYCO), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>4</sup>Assistant Professor, Department of Nutrition and Biochemistry (NUTRI & BIO), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>5</sup>Assistant Professor, Department of Health Education (HE), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>6</sup>Assistant Professor, Department of Parasitology (PAR), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>7</sup>Medical Officer, Department of Biostatistics (BIOS), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>8</sup>Assistant Professor, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

### SUMMARY

#### Background:

Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), a positive sense single-stranded RNA virus that causes Coronavirus disease (COVID-19) emerged in Wuhan, Hubei Province, China in December 2019. Acute epithelium damage caused by respiratory viruses like coronaviruses and influenza viruses can allow other microbes to invade. This has led to concern about SARS-CoV-2 co-infections with known viruses, bacteria and fungi. For instance, secondary infections by *Klebsiella pneumoniae* or *Escherichia coli* were reported to cause serious complications in patients with SARS, such as bacteremia, sepsis and nosocomial pneumonia (NP). In addition, *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Staphylococcus aureus* were frequently associated with NP and mortality in influenza pandemics. Additional laboratory biochemical tests are also critical in combating COVID-19. However, microbial co-infections and their possible effects on clinical outcomes of SARS-CoV-2 infected patients remain largely unknown. Keeping in view the above stated facts this study was aimed to characterize microbial infections in COVID-19 infected patients and evaluating SARS-CoV-2 associated microbial infections to provide new suggestions to combat the COVID-19 pandemic.



## Methodology:

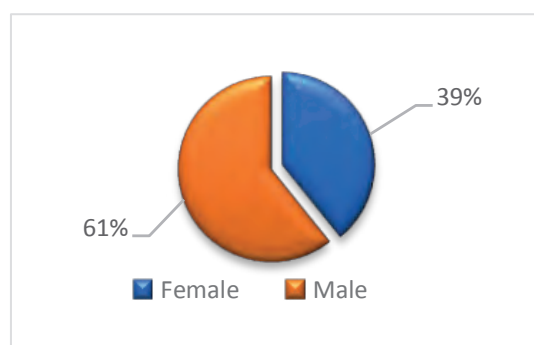
A cross-sectional study was conducted on 79 COVID-19 patients diagnosed according to the national guideline on COVID-19 case management admitted in Kurmitola General Hospital (KGH) in Dhaka, Bangladesh, using convenient sampling from March 2021 to June 2021. The patients socio-demographic and clinical data were recorded from their history follow-up sheet. Biological samples such as respiratory specimens (nasopharyngeal and throat swabs, blood and urine) were collected maintaining strict aseptic precautions from COVID-19 patients after getting their consent and transported to NIPSOM RT-PCR laboratory in Mohakhali, Dhaka.

## Results (Highlights):

1. Among 79 patients, age of the patients was ranged from 17 to 86 years (mean age 49.53 years) and highest 23% were in 51-60 years of age group (Table 1).
2. Of them, 61% were male and 39% were female (Figure 1).
3. Among them, highest co-morbidities were diabetes mellitus (31.6%), hypertension (29.1%) and bronchial asthma (13.9%) (Table 2).
4. Among 78 cultures from 79 hospitalized patients, 7.7% were identified as microbial infections with SARS-CoV-2 (Table 3).
5. The majority (66.7%) of isolates were from urine, followed by 33.3% from blood sample (Table 3).
6. *Enterococci* spp. (50%), Coagulase Negative *Staphylococcus* spp. (25%) and *Enterobacter* spp. (25%) were accounted for isolates from the urinary tract infection. *Pseudomonas* spp. (1.3%) and Hepatitis B Virus (1.3%) were detected from the blood stream infection (Table 3).
7. Of the 79 hospitalized patients, 55.7% of patients received antimicrobials and 25.3% of them received agents with broad-spectrum coverage by amoxicillin-clavulanic acid, azithromycin, doxycycline combination with or without ivermectin (Table 4).
8. On data collection time, 30.4% of patients received single antimicrobials, such as ceftriaxone, meropenem, ivermectin, azithromycin and cefixime (Table 4).
9. Mixed growths from nasopharyngeal (3.85%) and throat swab (12.82%) were found whereas in 14.2% of urine cultures had no definite predominance (Table 5-7).
10. A routine microscopic examination of the urine of 77 COVID-19 patients revealed the presence of pus cells ( $\geq 5$ /HPF) in 18% cases along with RBC in 6.49% cases (Table 7).
11. Among 78 patients, none was positive for Dengue NS1 antigen and antibody against HCV but 1.3% of them were diagnosed as HBsAg positive case (Table 8).

**Table 1: Distribution of the patients according to age group (n=79)**

Age Group	Frequency	Percent
11-20 Years	1	1.3
21-30 Years	8	10.1
31-40 Years	16	20.3
41-50 Years	17	21.5
51-60 Years	18	22.8
61-70 Years	13	16.5
71-80 Years	5	6.3
81-90 Years	1	1.3
Total	79	100



**Figure 1: Sex distribution of the patients (n=79)**





**Table 2 : Distribution of the patients according to co-morbidities (n=79)**

Name of the Comorbidity	f (%)
COPD	7 (8.9)
DM	25 (31.6)
HTN	23 (29.1)
CHD	4 (5.1)
Bronchial Asthma	11 (13.9)
CKD	3 (3.8)
CVD	6 (7.6)
History of AMI	2 (2.5)
History of Stroke	2 (2.5)

**Table 3 : Microbial infection among COVID-19 infected patients (n=78)**

Type of Infection	f (%)	Microbial Infection Isolated Organism
Blood Stream Infection (Bacterial)	1 (1.3)	<i>Pseudomonas spp.</i>
Blood Stream Infection (Viral)	1 (1.3)	Hepatitis B Virus
Urinary Tract Infection (UTI)	4 (5.1)	<i>Enterobacter spp.</i> (1) Coagulase Negative <i>Staphylococcus spp.</i> (1) <i>Enterococci spp.</i> (2)
<b>Total Coinfection Found in 6 (7.7%) patients</b>		

**Table 4 : Distribution of the patients according to administration of anti-microbial agents (n=79)**

Use of Anti-microbial agents	Frequency	Percent
No data regarding use of antimicrobial	35	44.3
Single	24	30.4
Combination	20	25.3

**Table 5 : Findings of growth isolated from nasopharyngeal and throat swab culture (n=78)**

Name of the organism	Nasopharyngeal Swab Culture f (%)	Throat Swab Culture f (%)
No growth	60 (76.92)	30 (38.46)
Mixed growth	3 (3.85)	10 (12.82)
<i>Staphylococcus aureus</i>	7 (8.97)	2 (2.56)
Coagulase negative <i>Staphylococcus</i>	5 (6.41)	2 (2.56)
<i>Streptococcus</i>	3 (3.85)	23 (29.50)
<i>E. Coli</i>	0	6 (7.69)
<i>Klebsiella</i>	0	2 (2.56)
<i>Pseudomonas</i>	0	3 (3.85)



**Table 6 : Bacterial profile of mixed growth isolated from throat swab (n=10)**

Name of the organism	Frequency	Percent
<i>Staphylococcus aureus</i> & <i>Streptococcus</i> species	4	40.0
<i>Streptococcus</i> , <i>Esch. coli</i> , <i>Pseudomonas</i>	2	20.0
Coagulase Negative <i>Staphylococcus</i> & <i>Klebsiella</i>	1	10.0
<i>Klebsiella</i> & <i>Acinetobacter</i>	1	10.0
<i>Streptococcus</i> species, <i>Candida</i> & <i>E. coli</i>	1	10.0
<i>Staphylococcus aureus</i> & <i>Streptococcus</i> species, <i>Pseudomonas</i>	1	10.0

**Table 7: Routine examination findings of urine of COVID-19 patients (n=77)**

Biochemical findings			c. Routine microscopic examination findings		
a. Urinary Glucose status of the patients			Urine microscopy finding	Frequency	Percent
Status	Frequency	Percent	Pus cell ( $\leq 5$ /HPF)	63	82
Nil	60	77.9	Pus cell ( $\geq 5$ /HPF)	14	18
250 mg/dl	3	3.9	RBC	5	6.49
500 mg/dl	7	9.1	d. Findings of culture		
1000mg/dl	5	6.5	Name of the organism	Frequency	Percent
2000 mg/dl	2	2.6	No growth	62	80.52
b. Urinary Albumin Protein status of the patients			Mixed growth	11	14.28
Status of Urinary Albumin Protein	Frequency	Percent	Coagulase negative <i>staphylococcus</i>	1	1.30
Nil	69	89.6	<i>Enterococci</i>	2	2.60
Trace	7	9.1	<i>Enterobacter</i>	1	1.30
One plus ( $\geq 30$ mg/dl)	1	1.3			

**Table 8: Serological test (n=78)**

Status	Serum HBsAg f (%)	Anti HCV antibody f (%)	Dengue NS1 f (%)
Positive	1 (1.3)	0	0
Negative	77 (98.7)	78 (100)	78 (100)

## Conclusion:

Data regarding bloodstream and respiratory bacterial and fungal infections among patients with COVID-19 are generally of poor quality with missed information about involved microorganisms and their profile of sensitivity to antimicrobial agents. Our results will encourage the systematic administration of an empiric antibiotic monotherapy with a 3rd generation cephalosporin, with a prompt de-escalation as soon as possible.

## Policy Recommendations:

- Further large-scale prospective studies are needed to verify the incidence of bacterial and fungal infections and their role on the outcome of COVID-19
- Culture-independent techniques, such as polymerase chain reaction (PCR) and next-generation sequencing (NGS) are highly sensitive to identifying potential pathogens co-infecting along with SARS-CoV-2.



## Research Activities of NIPSOM



Dissemination of the findings of the research titled 'Association of COVID-19 with maternal and perinatal outcomes in pregnancies during pandemic in Bangladesh'



Dissemination of the findings of the research titled 'HIV Sero-Prevalence Among Tuberculosis Patients in Bangladesh: A Nationwide Cross-Sectional Study'



## Tobacco consumption and severity of COVID-19 patients: Bangladesh perspective

**Publication Status:** Under Process

### Investigators Details

#### Principal Investigator



**Dr. Khursheda Akhter**  
Associate Professor  
(RCH), NIPSOM

#### Co- Principal Investigator



**Prof. Dr. Md. Ziaul  
Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

K. Akhter<sup>1</sup>, M.Z. Islam<sup>2</sup>

<sup>1</sup>Associate Professor, Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh

<sup>2</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka, Bangladesh





## SUMMARY

### Background:

COVID-19 was named “The first pandemic of the 21st century” by the WHO; that reflected its continent-to-continent spread and a high case fatality. Throughout the world, millions of people are unexpectedly dead due to COVID-19 pandemic since December 2019. It may lead to acute respiratory failure and evolve to acute respiratory distress syndrome, often requiring mechanical ventilation. It is known that tobacco use impair the immune function; make double the risk of lung infection (e.g. tuberculosis). Moreover, in June 2020 WHO report warned that smoking could be a risk factor for the adverse prognosis of COVID-19. In COVID-19 situation the virulence of virus, with tobacco consumption may aggravate disease progression. In COVID-19 situation, it is necessary to find out the relevant reality on severity related with tobacco consumption in Bangladesh; aim of the study to find out whether COVID-19 patients who are exposed tobacco use would have more severe illness than those not exposed. Epidemiological evidence of the association between smoking and COVID-19 includes 1,099 patients with laboratory-confirmed COVID-19, 12.3% of current smokers required mechanical ventilation, were admitted to an intensive care unit (ICU), or died, compared with only 4.7% of non-smokers. However, from published data it was calculated that the smokers were 1.4 times more likely (RR=1.4, 95% CI: 0.98–2.00) to have severe symptoms of COVID-19 and approximately 2.4 times more likely to be admitted to an ICU, need mechanical ventilation or die compared to non-smokers (RR=2.4, 95% CI: 1.43–4.04). There is no clear cut evidence found on COVID-19. Evidence of the study will help to build awareness of general population against the tobacco consumption. During national guideline of management of COVID-19, effects of tobacco consumption on health will be included. At national level policy makers can pay attention on this.

### Methods:

It was a cross-sectional study, conducted at four COVID-19 dedicated public hospitals in Dhaka city - Mugda 500 beds General Hospital, Mugda, Kuwait Bangladesh Friendship Govt. Hospital, Shaheed Suhrawardy Medical College Hospital and DNCC Dedicated COVID-19 Hospital, Dhaka during period of May–November 2021 among COVID-19 positive patients admitted in hospital. Selection criteria were diagnosed COVID-19 positive patients (RT-PCR test positive); Adult (18 years and above); who gave informed consent. Considering the percentage of tobacco consumption act as a risk factor of COVID-19 patients along with morbidity and not cured as 19.7% (Islam MZ, *et al.* 2020) 95% CI, design effect 2, 5% margin of error and 20% non response, the sample size was estimated as 583. Respondents were selected using purposive sampling from indoor of public hospitals- general ward, ICU, HDU, CCU. Data collection instrument and techniques were face to face interview using semi-structured questionnaire and medical record review using checklist. For analysis, severity of COVID-19 was re-categorized as ‘0’ for mild and moderate and as ‘1’ for severe and critical. Ethical clearance was obtained from Institutional Review Board of NIPSOM (NIPSOM/IRB/2021/27 04/08/2021). Informed written consent was taken from respondents or care givers. COVID-19 personal protective and safety measures were strictly maintained.

Severity of COVID-19 patients were categorized as Mild: C/F mild and no evidence of pneumonia; Moderate: S/S of pneumonia,  $SpO_2 \geq 90\%$  on room air; Severe: S/S of pneumonia, Respiratory rate  $>30$  breath/min or  $SpO_2 < 90\%$  on room air; Critical: Patient require ICU care or Severe COVID-19 case meeting any of the following criteria- Respiratory failure and require mechanical ventilation, sepsis, septic shock, Acute Respiratory Distress Syndrome and any organ failure.





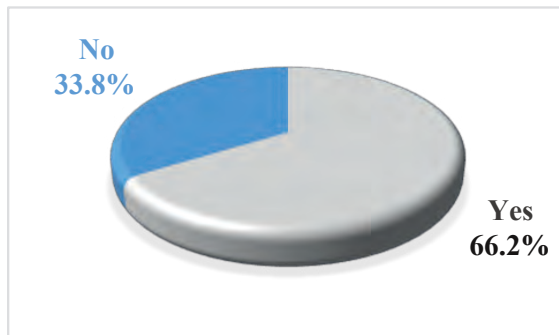
### Results (Highlights):

1. Distribution of COVID-19 patients by socio-demographic variables- 46% were in 60+ age group, female were 49%, housewife 55%, literate 82% and 59% belonged to joint family (Table-1).
2. About more than half patients (66%) ever consumed tobacco throughout their life (Figure-1).
3. Among them 22% smoking tobacco and 64% consumed smokeless tobacco (Figure-2).
4. Average days of hospital stay were 10 days. About 80% patients were admitted in general ward. History of O<sub>2</sub> therapy included- high flow nasal cannula (32.4%), oxygen mask (56.1%), re-breathing bag (44.3%) and intubation (5.1%) (Table-2).
5. According to respiratory complication, 63% suffered from fast breathing, PO<sub>2</sub><90 was 62%, whereas 28% patients suffered from Acute Respiratory Distress Syndrome (Table-3).
6. Regarding severity of COVID-19 patients, about 35% patients were in severe category and 26% were in critical category. (Figure-3).
7. In 20-39 age groups, 52 patients were in moderate category; in 40-59 age group 93 patients were moderate but in 60+ age group 109 patients were severe and 84 patients were critical (Figure-4).
8. The association between age and severity of COVID-19 patients were found statistically significant ( $p<0.0001$ ); sex of patients was associated with severity of COVID-19 ( $p=0.004$ ), whereas association between occupation of the patients and severity of COVID-19 was found highly significant ( $p<0.0001$ ). Type of family was also significantly associated with severity of COVID-19 patients ( $p=0.004$ ) (Table-4).
9. The association between tobacco consumption and severity of COVID-19 patients was found statistically significant ( $p=0.001$ ) (Table-5).
10. Type of tobacco consumption was associated with COVID-19 severity ( $p=0.024$ ) (Table-5)

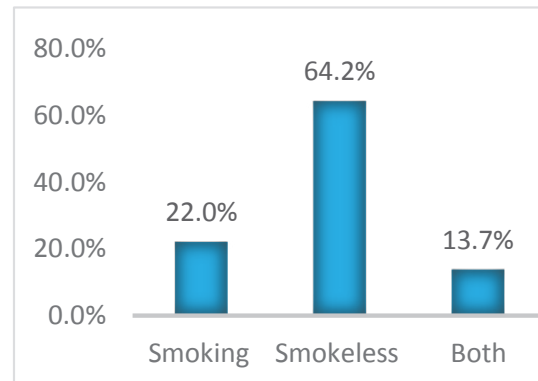
**Table-1: Distribution of patients by socio-demographic variables (n=583)**

Variables		Frequency (%)
Age	20-39	96 (16.47)
	40-59	221 (37.91)
	60+	266 (45.63)
Mean age 55.63, SD $\pm 15.46$ , Maximum value 100 and minimum value 20		
Gender	Male	240 (41.17)
	Female	343 (58.83)
Occupation	Service	141 (24.19)
	Housewife	319 (54.72)
	Others	123 (21.10)
Education	Illiterate	102 (17.50)
	Literate	481 (82.50)
Marital status	Married	522 (89.54)
	Unmarried/Divorced	61 (10.46)
Family Type	Joint	345 (59.18)
	Nuclear	238 (40.82)
Income (in taka)	10000-29999	154 (26.42)
	30000-49999	284 (48.71)
	50000+	145 (24.87)
Mean family income was 36881.65 taka, SD $\pm 17129.73$ and max. value 150000, min 10000.		





**Figure 1: Ever consume tobacco throughout the life (n=583)**



**Figure 2: Type of tobacco consumption**

**Table 2: Hospital stays, admission and oxygen therapy**

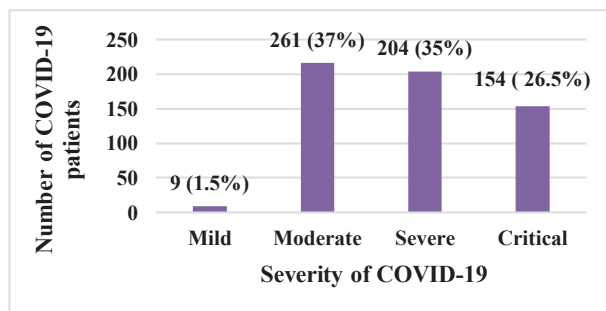
Variables	f (%)
<b>Hospital stays (in days) Median (IQR) 10.0 (11.0)</b>	
<b>Hospital admission</b>	
ICU	89 (15.3%)
General	465 (79.8%)
HDU	27 (4.6%)
CCU	2 (0.3%)
<b>History of Oxygen therapy*</b>	
High flow nasal cannula	189 (32.4%)
Oxygen mask	327 (56.1%)
Re-breathing bag	258 (44.3%)
Intubation	30 (5.1%)

\*Multiple responses

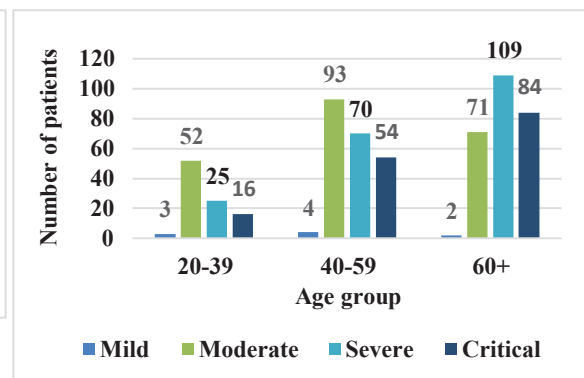
**Table 3: Respiratory and other complications**

Variables	%
<b>Respiratory related complications*</b>	
Chest Indrawing (534)	6.0
Grunting (534)	6.9
Fast breathing (536)	63.2
Partial pressure of Oxygen (<90) (579)	61.7
Cyanosis present (540)	8.3
<b>Other complications*</b>	
Sepsis (461)	8.5
Acute Respiratory Distress Syndrome (ARDS) (547)	28.2
Altered mental status (547)	4.9
H/O renal failure (547)	0.2
Septic Shock (548)	1.5

\*Multiple responses



**Figure 3: Assessment of severity of COVID 19 cases**



**Figure 4: Severity of COVID-19 according to age**



**Table 4: Association between socio demographic variables and severity of COVID 19 patients**

Variables		n	Severity of COVID -19 patients		p-value
			Yes (%)	No (%)	
Age	20-29	96	42.7	57.3	<0.0001
	40-59	221	56.1	43.9	
	60+	266	72.6	27.4	
Sex	Male	240	68.3	31.7	0.004
	Female	343	56.6	43.4	
Occupation	Service	141	52.5	47.5	<0.0001
	Housewife	319	59.9	40.1	
	Others	123	75.6	24.4	
Education	Illiterate	102	68.6	31.4	0.099
	Literate	481	59.9	40.1	
Type of Family	Joint	345	36.5	43.5	0.004
	Nuclear	238	68.5	31.5	

**Table 5: Tobacco consumption and COVID-19 severity**

Variables		Severity in COVID -19		p-value
		Not Severe n (%)	Severe n (%)	
Ever consume tobacco throughout the life	Yes	117(30.3)	269(69.7)	0.001
	No	108(54.8)	89(45.2)	
Type of tobacco	Smoking tobacco	31(36.5)	54(63.5)	0.024
	Smokeless tobacco	78(31.5)	170(68.5)	
	Both	8(15.1)	45(84.9)	

### Conclusion:

Two-third of the patients consumed tobacco throughout their life. Majority of the patients were experienced with the severity of COVID-19. Patients who consumed tobacco ever had greater experience on severity of COVID-19 as opposed to non-consumers. Association between the severity of COVID-19 and respondents those who were more than 60 years of age, male, in a nuclear family and had co-morbidities were significant.

### Policy Recommendations:

- For the reduction of tobacco consumption, tobacco products should be excluded from ‘The Essential Commodities Act, 1957’ as essential product
- Necessary steps can be taken to introduce management modality device in national guideline, especial focus should be given on elderly.
- Discouraging message on tobacco use could be incorporated in the COVID-19 awareness campaign
- Further comprehensive study can be done to find out the causal relationship





## Training, Seminars and Workshops



## Dynamics of COVID-19 vaccination program in Bangladesh: compliance with universal health coverage

**Publication Status** : Ongoing Research

### Investigators Details

#### Principal Investigator



**Prof. Dr. Md. Ziaul Islam, PhD**  
Head, Dept. of CM,  
NIPSOM

#### Co-investigator



**Prof. Dr. Baizid Khorshid Riaz, PhD**  
Director, NIPSOM  
Head, Dept. of PH&HA

#### Co-investigator



**Dr. Nasrin Sultana**  
Associate Professor  
(CM), NIPSOM

#### Co-investigator



**Md. Meshbahur Rahman**  
Assistant Professor  
(BIOS), NIPSOM

#### Co-investigator



**Dr. Fahad Mahmood**  
Lecturer, Dept. of CM,  
NIPSOM

#### Co-investigator



**Dr. Md. Foyzur Rahman**  
Medical Officer, Dept. of  
CM, NIPSOM

#### Co-investigator



**Dr. Md. Asif Adnan**  
Lecturer, Dept. of BIOS,  
NIPSOM

M.Z. Islam<sup>1</sup>, B.K. Riaz<sup>2</sup>, N. Sultana<sup>3</sup>, M.M. Rahman<sup>4</sup>, F. Mahmood<sup>5</sup>, M.F. Rahman<sup>6</sup>, M.A. Adnan<sup>7</sup>

<sup>1</sup>Head, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>2</sup>Director & Head of the Department of Public Health and Hospital Administration (PH&HA), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>3</sup>Associate Professor, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>4</sup>Assistant Professor, Department of Biostatistics (BIOS), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>5</sup>Lecturer, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>6</sup>Medical Officer, Department of Community Medicine (CM), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

<sup>7</sup>Lecturer, Department of Biostatistics (BIOS), National Institute of Preventive and Social Medicine (NIPSOM), Dhaka, Bangladesh

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## EXECUTIVE SUMMARY

### Background:

Mass Covid-19 vaccination has proven to be a successful way to stop the spreading of the virus and control the spread of the pandemic. Bangladesh, a country that is by no means a stranger to such vaccination program, has organized a successful and robust vaccination program using a total of seven vaccines acquired from various sources. The program was rolled out all over the country and at its core was the principle of universality as seen by its upholding of equity, quality, integrity and inclusivity. The current study aimed to assess the dynamics of COVID-19 vaccination program in Bangladesh and its compliance with UHC.

### Methods:

This country-wide population based cross-sectional study with mixed method approach was conducted within six months' period; from January to June 2022. In quantitative part, the dynamics of the COVID-19 vaccination program was assessed by using a big dataset (population size N= 129082205) obtained by national COVID-19 database "Shurokkha". With this, a total of 24960 vaccinated individuals were selected by multistage stratified sampling technique throughout the country to pursue the additional quantitative part of the study. Quantitative data were collected by telephonic interview and record reviews through a semi-structured questionnaire and three checklists respectively. In qualitative part, nine key informants were enrolled purposively. To collect data for the qualitative part, key informants' interview (KII) was conducted using a KII guide. The project was organized and implemented by the preset research team. Two field teams were deployed for collection of the data. Prior to the commencement of study, ethical clearance was obtained from Institutional Review Board (IRB) of National Institute of Preventive and Social Medicine (NIPSOM). Informed consent was taken from each participant before data collection. Privacy and confidentiality of data was maintained strictly. Participants got full freedom to refuse to participate at any point of the study. For validity of data, all interviews were recorded and stored in a safe place at the central office, NIPSOM under control of the principal investigator. Quality control of data were maintained in every step of the study. Quality of data were maintained in every step of the study. Data were managed and analyzed using statistical software- IBM SPSS and Atlas-Ti.

### Research Question:

What are the dynamics of the COVID-19 vaccination program in compliance with universal health coverage in Bangladesh?

### General Objective:

To assess the dynamics of the COVID-19 vaccination program in compliance with universal health coverage (UHC) in Bangladesh.

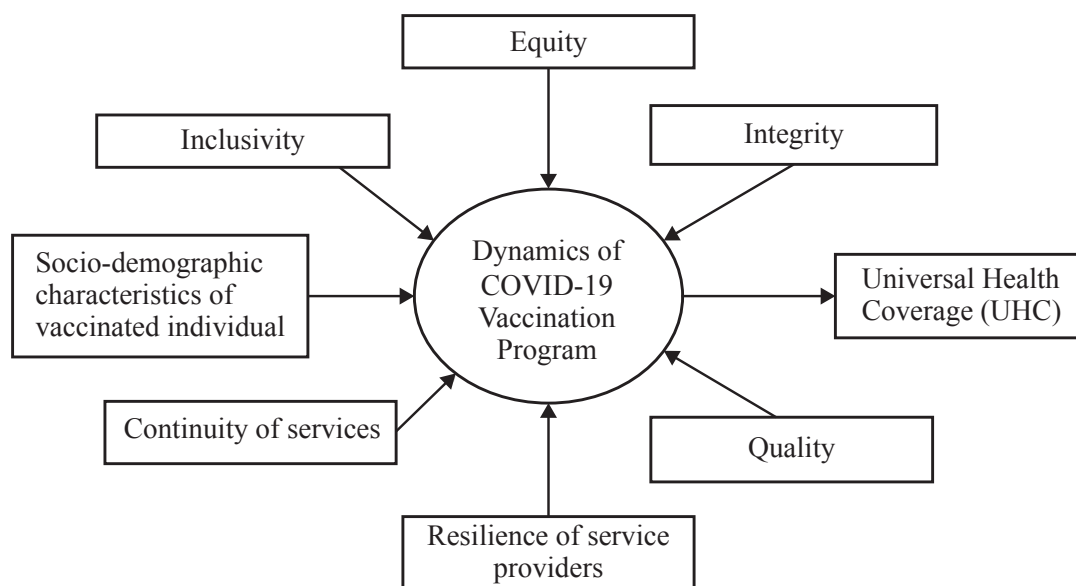
### Specific Objectives:

1. To determine the baseline characteristics of the COVID-19 vaccinated people in Bangladesh
2. To verify the inclusivity of the COVID-19 vaccination program in Bangladesh.
3. To assess the equity in the COVID-19 vaccination program.
4. To evaluate the quality of the COVID-19 vaccination program.
5. To assess the safety of the COVID-19 vaccination program.



6. To evaluate accessibility to the COVID-19 vaccination program.
7. To evaluate the effectiveness of the COVID-19 vaccination program.

### Conceptual Framework:



### Materials and Methods:

**Study Design:** It was a country-wide population based cross-sectional study with mixed method approach. Both qualitative and quantitative approach were considered.

**Study Period:** The study was conducted from January to June 2022.

**Study Places:** The study considered all sixty-four (64) districts of eight (8) divisions of Bangladesh. The study places for qualitative data collection were the Ministry of Health and Family Welfare (MoH&FW), Bangladesh Secretariat, Motijheel, Bangladesh, Expanded Program of Immunization (EPI) Headquarter, Mohakhali, Dhaka, Bangladesh, Directorate General Health Services (DGHS), Mohakhali, Dhaka, Bangladesh, Center for Disease Control (CDC), Mohakhali, Dhaka, Bangladesh, MIS-Health, DGHS, Mohakhali, Dhaka, Bangladesh, Directorate General of Drug Administration (DGDA), Mohakhali, Dhaka, Bangladesh, National Immunization Technical Advisory Committee (NITAC), Bangladesh.

**Study Population:** For quantitative part, vaccinated people of Bangladesh. For qualitative part, key informants included honorable Secretary, Health Services Division, Ministry of Health and Family Welfare; Director General of Health Services; Line Director; CDC; Chief, Health Information Unit of DGHS; Line Director; EPI; Director General of Drug Administration and members of NITAG.

**Sample Size:** Quantitative part: The final calculated sample size for the quantitative part was 24960. For the qualitative part, nine (9) Key Informants were interviewed.



**Selection Criteria:** All vaccinated people of Bangladesh were the study population. Both male and female participants were included in the study. Participants who gave informed consent were included only. The participants who were not respond to phone call on three (03) separate occasions and severely ill participants were excluded from the study.

**Sampling:** The participant, i.e., vaccinated people was selected by multistage sampling technique. All eight divisions of Bangladesh were included in the study. For qualitative part, the key informants (KI) were selected purposively.

**Data Collection Instruments:** A pre-tested semi-structured questionnaire and three (3) checklists were used for quantitative data collection. Key informant Interview (KII) guide was used for collection of qualitative data.

**Data Collection Technique:** Data were collected by telephonic interview from vaccinated people and record review of MIS. Key Informant Interview was carried out with the help of key informants' interview guide.

**Data Management:** Data were checked and verified both in the field and at the central level to ensure quality of data. Data were stored safely at NIPSOM. Data were analyzed by using IBM software. Quality of data were ensured in all stages of the study. To detect errors, inconsistency and irrelevancy, collected data were verified, checked and cleaned. To ensure quality of data, editing, compiling, coding and categorizing were done according to objectives and variables of the study. Finally, data were entered for analysis.

**Data Analysis:** Quantitative data will be edited and analyzed by IBM SPSS software considering the objectives and variables of the study. Descriptive statistics will include mean, frequency, standard deviation, proportion in table and graph. Inferential statistics will include. Data will be presented in tables and graphs in reports. Qualitative data will be analyzed by Atlas-Ti software.

**Ethical Considerations:** Ethical clearance was obtained from the National Research Ethics Committee (NREC) of Bangladesh Medical Research Council (BMRC). Informed consent was taken from all participants prior to data collection. The participation was voluntary. Details of the study and data collection procedure was read out and explained in the local language from the consent form containing objectives and methods of the study, duration, frequency, risks & benefits of interview. Informed consent was taken, and interview was conducted in Bengali. The information was dealt with highest confidentiality and was used only for this study. Privacy of the respondents were maintained during data collection. There were no physical harm or risk on the participants as data were collected by telephonic interview. For maintaining validity of data, all interviews were recorded. The participants were offered due respect and they were given full freedom to withdraw their consent of participation at any stage of the study. Data were analysed and presented anonymously and were used only for this study.



The background of the entire page is a dark blue color. Overlaid on this background is a complex network diagram. It consists of numerous circular nodes of varying sizes, some of which are highlighted with concentric circles. These nodes are interconnected by thin, light blue lines, creating a web-like structure that spans the entire page. The lines and nodes are more densely packed in some areas, particularly in the center-left, and more sparse in others.

## CHAPTER-2

Research Abstracts by  
**NIPSOM Students**

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**Dr Poonam Khetrapal Singh, WHO Regional Director (RD) for South-East Asia is visiting a stall of NIPSOM in Regional Consultation of the WHO Collaborating Centres held in New Delhi, India, 20 October 2016**



The stall of NIPSOM



RD, WHO SEARO visits the stall of NIPSOM



Director, NIPSOM briefs RD, WHO SEARO at its stall



Consultation between RD, WHO SEARO and Director, NIPSOM



Library, NIPSOM



Celebration of 100 days of Batch 45



Traditional drama staged by NIPSOM staff



Complementary speech to appreciate the artists of drama



## Barriers Experienced by the Physicians in Management of COVID-19 Patients

A. Sultana<sup>1</sup>, S.M.E. Ali<sup>2</sup>

<sup>1</sup>Dr. Asma Sultana, Student of MPH (Community Medicine) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. S.M. Emran Ali, Supervisor and Assistant Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The coronavirus disease 2019 (COVID-19) pandemic has fundamentally posed some barriers for health facilities and healthcare workers. Especially doctors face different barriers in management of COVID-19 patients. This study was conducted to find out the barriers in management of COVID-19 patients and to take steps to overcome it.

**Methods:** This was a descriptive cross-sectional study conducted among 217 physicians working in three COVID-19 dedicated hospitals during January to December 2020. Physicians were selected by convenient sampling. Data were collected using a pre tested semi-structured questionnaire through face to face interview. Informed written consent was taken from each participant. Quality control check for the data was done. Data were analyzed by SPSS software.

**Results:** Among the physicians, majority (59.9%) were aged 30-39 years and mean age $\pm$ SD was 34.24 $\pm$ 5.7 years, 57.1% were female and 42.9% were male. Concerning job experience, 37.8% of the physicians had job experience of 5-10 years, mean $\pm$ SD was 1.92 $\pm$ 0.8 and 47.9% had experience of 6 months-1 years of working in dedicated COVID-19 hospital, mean $\pm$ SD was 2.32 $\pm$ 0.6. Most of them (37.8%) had average monthly family income of BDT 50001-100000 and the mean family income of the participants was BDT 127299.54 $\pm$ 86589.59. Regarding different barriers experienced by the physicians, majority (88.5%) had experienced inadequate supply of PPE, 98.6% physicians experienced shortage of manpower, 55.8% of physicians didn't get any formal training regarding COVID-19 patient management. About 50.7% faced social stigma while 69.1% physicians had felt life insecurity and 67.3% had experience of health risk for conducting the COVID-19 patient management.

**Conclusion:** The study findings revealed that physicians experienced different barriers regarding personal safety, team organization, training, support and social stigma. The study findings will be helpful for future planning and policy making to prevent barriers of physicians in COVID-19 patient management.

**Key Words:** Barriers; Physicians; Management; COVID-19; Patients





## Immunity Status and Associated Factors among COVID-19 Vaccinated Health Personnel

S. Nigar<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Dr. Sanzia Nigar, Student of MPH (Community Medicine) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Health personnel are at risk for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) infection. Therefore, it is important to know the immunity status of health personnel after vaccination; for how long it persists and its relation with other associated factors. There is not much information available related to post vaccination immunity status among health personnel in our country. This study of immunity status and associated factors among COVID-19 vaccinated health personnel would help us in the analysis of vaccination policy and recommend modification.

**Methods:** This cross-sectional study was conducted from January to December 2021 among 150 health personnel from National Institute of Preventive and Social Medicine, Mohakhali, Dhaka. Data were collected using a semi-structured questionnaire and a checklist. Venous blood (5ml) was collected and tested for immunity status (for presence of IgG antibody) by a commercial kit. Data were analyzed by latest version of SPSS. Ethical issues were maintained strictly.

**Results:** Among the 150 respondents, majority (69.3%) were female. The mean ( $\pm$ SD) age was 36.05 ( $\pm$ 8.22) years, majority (78%) were in the age group of 30-59 years. COVID-19 infection was found in 48% of total respondents and 90.27% of them were symptomatic. The mean ( $\pm$ SD) duration of isolation was 17.06 ( $\pm$ 4.7) days and the mean ( $\pm$ SD) duration of hospitalization was 10.22 ( $\pm$ 5.4) days. Treatment was done with antiviral drug in 11.9% and with steroids in 10.4% participants. AstraZeneca, Moderna, Pfizer and Sinopharm vaccines were received by 65.3%, 18.7%, 14.7% and 1.3% respondents respectively. The mean ( $\pm$ SD) interval between first and second doses of vaccine was 49.63 ( $\pm$ 16.1) days. Though all of the respondents were tested for IgG antibody, it was found that 16% did not have antibody. Development of COVID antibody (IgG) was significantly higher among those who took regular nutritious food (95.3%) and who performed physical exercise regularly (32%). Comorbidities were found in 42% participants and IgG antibody was significantly lower among them. 89.9% developed antibody among graduates and significant association was found with educational qualification. COVID-19 infection, medications with steroids and antivirals had no significant association with antibody development.

**Conclusion:** A mentionable number of health personnel who still had not developed antibody are at risk of getting infection and need special attention.

**Key Words:** Immunity Status; Factors; COVID-19; Vaccinated; Health Personnel



## Impact of Obesity on Severity of COVID-19: A Retrospective Cohort Study

A. Jadeed<sup>1</sup>, M.Z. Islam<sup>2</sup>

<sup>1</sup>Dr. Ahmad Jadeed, Student of MPH (Community Medicine) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Md. Ziaul Islam, PhD, Supervisor and Head, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Obesity is an independent risk factor associated with severity of COVID-19 illness. Previous studies suggest that obesity is associated with COVID-19 severity. There is lack of data regarding impact of obesity on severity of COVID-19 in the context of Bangladesh. The purpose of the study was to assess the potential association between obesity and severity of COVID-19.

**Methods:** This retrospective cohort study was conducted with a cohort of purposively selected 110 COVID-19 patients, who were diagnosed by RT-PCR test and treated in COVID-19 dedicated hospitals of Dhaka city. Obese patients were exposed group and non-obese patients were non-exposed group. Data were collected by reviewing records and interviewing patients with the help of a semi-structured questionnaire and a checklist respectively. Informed written consent was taken from each patient before data collection. Data processing and analysis were performed by SPSS software. All ethical issues were maintained strictly.

**Results:** The study revealed that, risk of severe and critical COVID-19 pneumonia was higher among obese COVID-19 patients (RR=5.42, RR=2.5). Risk of ICU admission was higher among obese patients (RR=2.8). Risk of non-invasive mechanical ventilation (NIMV) was higher among obese patients (RR=3). The study found that there was significant association between COVID-19 pneumonia severity and co-morbidities like diabetes mellitus (46.3%), hypertension (47.2%) and coronary heart diseases (19.1%) ( $p<0.05$ ). The study revealed that majority of the tobacco consumers had severe COVID-19 pneumonia (64.4%) and among them who consumed tobacco for more than 15 years had severe COVID-19 pneumonia (69%) ( $p<0.05$ ).

**Conclusion:** The study revealed that mean ( $\pm$ SD) age of patients with obesity was higher than non-obese patients. Proportion of patients who required intensive care unit support was higher among obese patients. Requirement of oxygen by non-invasive mechanical ventilation was higher among obese patients. It is evident from the study that there should be proper set up for non-invasive mechanical ventilation and adequate supply of non-rebreather masks to resist severity of COVID-19.

**Key Words:** Impact; Obesity; Severity; COVID-19



## Mask Induced Headache among Senior Staff Nurses working in Tertiary Public Hospitals during COVID-19 Pandemic

M. Malakar<sup>1</sup>, M.K. Amin<sup>2</sup>

<sup>1</sup>Dr. Moumita Malakar, Student of MPH (Community Medicine) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Muhammad Kamrul Amin, Supervisor and Associate Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** During the COVID-19 epidemic, senior staff nurses as frontline healthcare workers are required to wear masks when caring for patients in hospitals. Studies have shown that wearing of mask for a prolonged period of time may develop mask induced headache. The objective of this study was to assess the state of mask induced headache among nurses working in tertiary public hospitals during COVID-19 pandemic.

**Methods:** The cross-sectional study was conducted from January to December 2021. A total 208 nurses were selected at three tertiary public hospitals in Dhaka city by convenient type of non-probability sampling. Data were collected through face-to-face interview using a semi-structured questionnaire. Finally, data were analyzed according to the study objective through Statistical Package for Social Sciences (SPSS). Informed written consent was taken before data collection and ethical issues were maintained at different stages of this study.

**Results:** Among 208 nurses, majority (92.3%) were female, mean ( $\pm$ SD) age was 31.08 ( $\pm$ 7.5) years and higher proportion (53.4%) was in 20-29 years group. Most of the participants (70.7%) were married. Majority of the participants' (41.8%) family income was in between 50000-79000 taka, mean ( $\pm$ SD) was 49990.38 ( $\pm$ 24952.51) taka. Out of all participants, 77.9% used surgical mask, 11.1% used cloth mask and remaining 11.1% used combination of surgical and KN95 mask. Among all, 53.3% had started headache within 15-30 minutes after wearing of mask and 37.8% had resolved their headache in between 15-30 minutes after removal of mask. Mask induced headache was found in 43.3% participants. Mask induced headache was dull in nature for 26% of the participants and 36.1% participants had bilateral headache. Wearing of mask more than 6 hours per day was significantly associated with mask induced headache ( $p=0.001$ ). It was found that, co-morbidities among the participants had statistically significant association with mask induced headache ( $p=0.000$ ).

**Conclusion:** The use of mask during COVID-19 pandemic is related to generating headache among nurses. Mask induced headache is an important issue among senior staff nurses working as frontline healthcare workers during COVID-19 pandemic which should be addressed with due attention.

**Key Words:** Mask Induced Headache; Senior Staff Nurses; Tertiary Public Hospitals; COVID-19; Pandemic



## Online Teaching and Academic Performance among Medical Students during COVID-19 Pandemic

M.N. Akhi<sup>1</sup>, M.K. Amin<sup>2</sup>

<sup>1</sup>Dr. Mehrun Nesa Akhi, Student of MPH (Community Medicine) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Muhammad Kamrul Amin, Supervisor and Associate Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 affected almost every sector across the world, including the higher education system as well as the medical education system. Online teaching is a new phenomenon in medical education for Bangladesh. The impact of online teaching on academic performance remains unclear. The study aimed at assessing the association between online teaching and academic performance of medical students during COVID-19 pandemic.

**Methods:** A total of 202 conveniently selected 4th-year medical students of both sexes were included in this descriptive cross-sectional study. The study started from January 1, 2021 to December 31, 2021. The study was conducted at Dhaka National Medical College and Shaheed Suhrawardy Medical College in Dhaka city. Ethical clearance was taken from respective authority. Data were collected with the help of a semi-structured questionnaire and a checklist by face-to-face interview and reviewing records respectively. Data were analyzed by SPSS software.

**Results:** The study revealed that among 202 students, majority (65.3%) of the students were in 23-24 years age group. In this study, 54% were female. Higher proportion of students (82%) was Bangladeshi. Majority (78.7%) of students resided in urban areas. Most students belonged to nuclear families (87.1%). The majority (66%) of the participants had monthly family income between TK.15000-TK.50000. For online classes, 76.2% students used smart phones. The study showed that, 85.6% classes were taken on Zoom platform. Majority (74.3%) had available 4G service. About 55.4% students had difficulty in interacting with teachers. About 42.6% students had illness due to online classes, among which 59.3% complained of headache. Studies were hampered among 56.9% students during pandemic. Mental pressure was suffered by 63.9% students. The majority (54.5%) had 75–79% class attendance. Among all students, 60.9% scored 6.0-6.9 in item scores and 94.1% passed the second professional examination.

**Conclusion:** The findings of this research may aid in improving medical students' academic performance in situations such as pandemics, when traditional classes are replaced by online classes.

**Key Words:** Online Teaching; Academic Performance; Medical Students; COVID-19; Pandemic



## Pathways of Childbirth Care in Pregnant Women attending Public and Private Tertiary Hospitals during COVID-19 Pandemic

M. Mirza<sup>1</sup>, M.Z. Islam<sup>2</sup>

<sup>1</sup>Dr. Mehnaaz Mirza, Student of MPH (Community Medicine) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Md. Ziaul Islam, PhD, Supervisor and Head, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Pathways of childbirth care are diverse, especially during pandemic situation and relevant information about it is scarce. Hence, this study was conducted to compare the pathways of childbirth care in pregnant women attending public and private hospitals during COVID-19 pandemic.

**Methods:** This analytic cross-sectional study was conducted between 101 pregnant women in a public tertiary hospital and 101 pregnant women in private tertiary hospital during COVID-19 pandemic in Dhaka city who were selected by purposive sampling. A pre-tested semi structured questionnaire was used to collect data through face-to-face interview. All ethical issues were maintained strictly in every stage of study procedure. Quality control checks for data were done. Data were analyzed by SPSS.

**Results:** The mean ( $\pm$ SD) age of pregnant women was 25.18 ( $\pm$ 4.0) years and 27.35 ( $\pm$ 4.2) years in public tertiary hospital group and private tertiary hospital group respectively ( $p=0.002$ ). In the public tertiary hospital group, plan for receiving Antenatal Care (ANC) by pregnant women (62.4%) was significantly lower ( $p<0.05$ ) than that of private tertiary hospital (92.1%) (OR=0.143, 95% CI: 0.063-0.326). Involvement in decision-making for childbirth care in pregnant women (73.3%) of public tertiary hospital was less than private tertiary hospital group (91.1%) (OR=0.268, 95% CI: 0.119-0.605). Regarding decision on conduction of childbirth, the first choice were doctors (51.5% for public hospital group and 72.3% for private hospital group) and second choice were TBA (31.7% for public hospital group and 17.8% for private hospital group), which was statistically significant ( $p=0.01$ ). The mean ( $\pm$ SD) number of antenatal visits were 2.41 ( $\pm$ 1.2) for pregnant women in public tertiary hospital group and 3.53 ( $\pm$ 1.4) for private tertiary hospital group, which was statistically significant ( $p=0.00$ ). Majority of the pregnant women in public tertiary hospital (55.3%) received ANC from government health care facilities and majority of the pregnant women in private tertiary hospitals (46%) attended ANC at private hospitals & clinics, which were statistically significant ( $p=0.00$ ).

**Conclusion:** Pathways of childbirth care were different between pregnant women attending public and private tertiary hospitals during COVID-19 pandemic. Hence, measures should be taken for further improvement in pathways of childbirth care.

**Key Words:** Pathways; Childbirth Care; Pregnant Women; Public and Private Tertiary Hospitals; COVID-19; Pandemic





## Perceived Mental Stress and Wellbeing among Adult COVID-19 Survivors

B. Biswas<sup>1</sup>, M.Z. Islam<sup>2</sup>

<sup>1</sup>Dr. Baisakhi Biswas, Student of MPH (Community Medicine) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Md. Ziaul Islam, PhD, Supervisor and Head, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Mental stress is a common psychological consequence of COVID-19 which is further negatively related with wellbeing of the COVID-19 survivors. In Bangladesh, there is very limited information about mental stress and wellbeing among the COVID-19 survivors. So, this study was conducted to assess the association between mental stress and wellbeing among adult COVID-19 survivors.

**Methods:** This cross-sectional study was conducted at Bangabandhu Sheikh Mujib Medical University (BSMMU) and Dhaka Medical College Hospital (DMCH) during the period from January to December 2021 among 115 adult COVID-19 survivors. Data were collected by face-to-face interview with a semi-structured questionnaire using the Perceived Stress Scale and WHO (Five) Wellbeing Index. A checklist was used for collecting data by reviewing medical records. Data were analysed by SPSS software. Informed written consent was taken before data collection.

**Results:** Out of all COVID-19 survivors, 54.8% were male and 45.2% were female and mean ( $\pm$ SD) age was 41.93 ( $\pm$ 12.4) years. The majority were urban residents (89.6%) and from nuclear families (90.4%), among them 98.3% were symptomatic and the most common symptoms were fever (87.7%), followed by cough (84.3%), bodyache (79.1%) and sore throat (79.1%). Among the survivors, 36.5% had low, 62.6% had moderate and only 0.9% had high perceived mental stress. Regarding the level of wellbeing, 65.2% had poor, 31.3% had average and 3.5% had good wellbeing. Perceived mental stress was significantly higher and wellbeing was significantly lower in patients who were isolated for COVID-19 (91.3%) and had co-morbidities (80%) ( $p < 0.001$ ). Perceived mental stress and wellbeing was significantly associated ( $p < 0.05$ ) with financial problems (51.3%), professional problems (8.7%) and problems in conjugal life (13.9%). The mean score of wellbeing was significantly lower among those who had a higher level of perceived mental stress.

**Conclusion:** The study revealed that mental stress was negatively correlated with wellbeing among adult COVID-19 survivors. So, to improve their wellbeing and to reduce mental stress, special attention should be given such as positive attitude, social support, special medical care and adequate leisure time. Need-oriented and prioritized services to COVID-19 survivors emphasizing mental stress and wellbeing should be implemented.

**Key Words:** Perceived Mental stress; Wellbeing; Adult; COVID-19, Survivors



## Perceived Mental Stress of the Physicians involved in Treatment of COVID-19 Patients

M.F. Sadma<sup>1</sup>, S.K. Ferdousi<sup>2</sup>

<sup>1</sup>Dr. Mehnaz Farin Sadma, Student of MPH (Community Medicine) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Syeda Khaleda Ferdousi, Supervisor and Associate Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic potentially increases doctors' work demands and limits their recovery opportunity; which consequently puts them at a high risk of adverse mental health impacts. Physicians' poor mental health not only affects their professional performance and but also affects the quality of healthcare provided by them. Hence, the study was carried to assess the perceived mental stress of the physicians involved in treatment of COVID-19 patients.

**Methods:** This cross-sectional study was conducted from January to December 2020 with 207 physicians selected from Shaheed Suhrawardy Medical College & Hospital and Dhaka Medical College & Hospital. The physicians were enrolled by convenient sampling technique. A semi-structured questionnaire was used to collect data from the physicians through face-to-face interview.

**Results:** The mean age ( $\pm$ SD) of the physicians was 35.85 ( $\pm$ 6.4) years. Majority (84.1%) were Muslim, 15.5% were Hindu and 0.5% was Buddhist. Among the physicians, 93.2% were living in urban area and 6.8% were living in sub-urban area. Majority (82.6%) of the physicians were married and 17.4% physicians were unmarried. Majority (78.3%) of the physicians had moderate stress, 12.6% physicians had low stress and 9.2% physicians had high mental stress. The perceived mental stress of physicians was significantly associated with selected variables such as workload ( $p < 0.001$ ), working environment ( $p < 0.001$ ), family size ( $p < 0.001$ ), ability to balance professional and personal life ( $p < 0.001$ ), afraid of getting COVID-19 infection ( $p < 0.001$ ), working hours ( $p < 0.002$ ), family monthly income ( $p < 0.007$ ) and sleep deprivation ( $p < 0.002$ ).

**Conclusion:** The study revealed that perceived mental stress was high among the physicians. Appropriate coping strategies must be adopted by them to cope up with this stress.

**Key Words:** Perceived Mental Stress; Physicians; Treatment; COVID-19; Patients



## Work Stress and Quality of Life of the Physicians working in Dedicated COVID-19 Hospitals

M.F. Rahman<sup>1</sup>, M.Z. Islam<sup>2</sup>

<sup>1</sup>Dr. Md. Foyzur Rahman, Student of MPH (Community Medicine) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Md. Ziaul Islam, PhD, Supervisor and Head, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Coronavirus disease 2019 (COVID-19) pandemic has created unprecedented disruption in working conditions of the physicians, which poses work stress and impairs the quality of life of the physicians but relevant information on work stress of the physician is inadequate in our country. So, this study was conducted to assess the level of work stress and quality of life of the physicians.

**Methods:** This was a cross-sectional study conducted from January to December 2020 among 168 physicians working in three purposively selected COVID-19 dedicated hospitals in Dhaka city. Data were collected through face-to-face interview using a pre-tested semi-structured questionnaire. Data were analyzed by SPSS. The study was approved by Institutional Review Board of NIPSOM.

**Results:** Out of all physicians, 48.2% were male and 51.8% were female, mean age was 33.1(±5.5) years and the highest frequency was in the age group 30-46 years. Regarding educational qualification, 68% were medical graduate and 32% had post-graduation degree. Among all, 50.6% physicians had no work stress and 49.4% had work stress. Among the physicians, 92.3% had average, 6.5% had poor and 1.2% had good quality of life. Work stress level was higher in female physicians (52.9%) than male physicians (45.7%). Work stress level was significantly ( $p<0.05$ ) higher in unmarried physicians (75.6%) than married physicians (40.5%) and work stress level was significantly ( $p<0.05$ ) higher in small family (52.4%) than large family (81%). Work stress level was insignificantly ( $p>0.05$ ) higher in those physicians who had no post-graduation degree (53.9%). Quality of life was significantly ( $p<0.05$ ) better in those physicians who were in age group of 30-46 years (96.6%). Quality of life was significantly ( $p<0.05$ ) better in those physicians whose monthly income was 10000-20000 BDT (100%) and whose monthly family income was 200000-400000 BDT (92.3%). In respect of work stress and poor quality of life, 9.6% physicians had work stress and 3.5% had no work stress, which was not statistically significant ( $p>0.05$ ).

**Conclusion:** Special attention should be given to reduce the work stress of the physicians. Positive attitude, healthy work environment, adequate leisure time, special medical care, incentive and transport should be ensured. It is imperative to improve the quality of life of the physicians, which will enhance their professional performance and hence the care of the patients.

**Key Words:** Work Stress; Quality of Life; Physicians; COVID-19; Hospitals



## Clinical Attributes and Outcomes of COVID-19 Patients

P.K. Banik<sup>1</sup>, S. Shaheen<sup>2</sup>

<sup>1</sup>Dr. Protik Kumar Banik, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Shafia Shaheen, Supervisor and Assistant Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 pandemic has had a detrimental impact on the health system, the economy as well as the lifestyle of individuals in Bangladesh, as in the rest of the world. As there are differences between Bangladesh and the other countries suffering from this novel coronavirus in terms of demographics, clinical attributes and outcomes, the aim of this study was to find out the clinical attributes during the illness and outcomes in terms of current functional status among Bangladeshi COVID-19 patients.

**Methods:** This cross-sectional study performed over a period of one year from January to December 2020 was conducted among purposefully selected 124 positive patients of icddr,b laboratory in Dhaka city, where samples from different parts of the country were sent for COVID-19 test. Data were collected by telephone interview using a semi-structured questionnaire and outcomes were measured by the Post-COVID-19 Functional Status Scale (Version 2).

**Results:** The mean±SD age was 37.14±13.2 years and 66.1% were residents of Dhaka city. Among the respondents, 43% thought to be affected from a crowded place, predominant symptoms were fever (54%), the mean duration of which was 2.62±3.6 days and cough (33.1%), the mean duration of which was 3.65±7.7 days. In this study, 6.5% needed hospitalization, all were male and 25% of the admitted patient needed ICU support. Among the 116 non-hospitalized patients, 56.03% got treatment from hospital visit and 26.72% got treatment over telephone consultation. In this study, 32.3% had comorbidity, hypertension was predominant among them (20.2%). After about 10 months of the illness, 69.4% have no functional limitations, 25% have negligible functional limitations and 2.4% have died after being diagnosed. This study also found that there was a significant association between the current functional status with age ( $p<0.001$ ), presence of symptom ( $p<0.001$ ), place of treatment ( $p<0.002$ ) and number of comorbidities ( $p<0.001$ ). Moreover, there was a significant association between the functional status with comorbidities like CKD ( $p<0.001$ ) and CLD ( $p<0.008$ ). This study revealed that about two-third of the COVID-19 patients had no functional limitations after 10 months of their illness.

**Conclusion:** Further studies of these patients with more and detailed information in clinical settings are recommended to get the actual picture of the outcomes in terms of functional status.

**Key Words:** Clinical Attributes; Outcomes; COVID-19; Patients



## COVID-19 Pandemic in Bangladesh: Assessment of Concern among Medical Technologists at National Level Laboratories

S. Zahan<sup>1</sup>, S. Halim<sup>2</sup>

<sup>1</sup>Dr. Sharmin Zahan, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Shafiqul Halim, Supervisor and Head, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Medical technologists are especially responsible for collecting sample, operating and maintaining the equipment used to analyze specimens and ensuring that tests are completed in a correct and timely manner, thus provides the clinical support for the diagnosis of COVID-19.

**Methods:** This cross-sectional study was conducted to assess the level of concern among medical technologists at selected national level laboratories in Bangladesh from January 2020 to January 2021. Total 240 medical technologists fulfilling the selection criteria were enrolled by purposive sampling. Data were collected through face to face interview using a semi-structured questionnaire and previously validated concerned scale. Data were analyzed by computer software SPSS version 26.

**Results:** Medical technologists were categorized into three groups: low concern, at or below the first quartile of concern scores (in the range of 21-36 points); moderate concern, in the interquartile range of concern scores (37-57 points) and high concern, at or above the third quartile (with 58-78 points). Among all variables studied, a moderate level of concern score (Mean $\pm$ SD, 47.81 $\pm$ 16.36) on COVID-19 pandemic in Bangladesh was observed on 124 technologists (51.67%) that was more than half of the total technologists, where the mean age was 33.4 ( $\pm$ 8.9) years with the age range of 21-58 years. Significant differences ( $p < 0.005$ ) in the distribution of concern scores carried out by chi-square test were observed among the participants on their age, marital status, educational qualification, household dwelling, working experience and doing over time/extra work where comparatively high moderate concern scores were observed among three fifth of the technologists (66.1%) who were 30 years of age, more than half (55.8%) of the male participants, three fifths (70.2%) of unmarried individuals, above three fifth (68.8%) of B.Sc. graduates, most of the technologists who were living alone (87.8%), three fifth of who had up to 5 years of working experience (63.2%), above three fourth of the technologists (77.4%) who were doing extra work and more than half (52.1%) who had no field duty.

**Conclusion:** The assessment of level of concern on COVID-19 pandemic in Bangladesh among the medical technologists would need further evaluation. Institute, laboratory workers, health department and government should work together to establish preventive and control measures and to guide, train up and educate to improve their level of concern.

**Key Words:** COVID-19; Pandemic; Bangladesh; Assessment; Concern; Medical Technologists; National Level Laboratories





## Generalized Anxiety Disorder and Sleep Quality of Day Laborers during COVID-19 Pandemic

T. Zubayer<sup>1</sup>, S. Shaheen<sup>2</sup>

<sup>1</sup>Dr. Tansiv Zubayer, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Shafia Shaheen, Supervisor and Assistant Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The world has been severely affected by coronavirus disease 2019 (COVID-19) since December 2019. This pandemic had led to rising food costs making it difficult for underprivileged people like day laborers to survive. This study was aimed to assess the mental health status of day laborers during the pandemic.

**Methods:** Sample size of this study was 227 day laborers from Faridpur district, Bangladesh. This was a cross-sectional study and sampling method was convenient sampling. Face to face interview was performed by using a semi-structured questionnaire containing generalized anxiety disorder (GAD-7) scale and Pittsburgh Sleep Quality Index (PSQI) scale.

**Results:** The mean age of the respondents was found  $32.46 \pm 12.01$  years. Among them majority were male (96.9%). Most of the respondents were married (72.7%). The mean income was found 450 Taka per day. Among the respondents, 47.1% were current smoker. Majority of the respondents had minimal anxiety (75.3%) and rest had mild anxiety (14.5%), moderate anxiety (9.7%) and severe anxiety (0.4%). Among the respondents, majority had good sleep quality (74.4%) and rest had poor sleep quality (25.6%). Moreover, there was significant association between the generalized anxiety disorder and sleep quality of day laborers. There was also highly significant strong positive correlation between generalized anxiety disorder and sleep quality ( $r=+0.894$ ,  $p<0.001$ ). This study also found that there were significant associations between the age with poor sleep quality ( $p=0.023$ ), marital status with poor sleep quality ( $p=0.001$ ), duration of occupation with poor sleep quality ( $p=0.035$ ), smoking status with poor sleep quality ( $p=0.03$ ), duration of smoking with poor sleep quality ( $p=0.019$ ). In the multivariate logistic regression model, it was seen that marital status might be potential risk factor for poor sleep quality. Married day laborers were more likely to suffer poor sleep quality than unmarried day laborers (AOR=2.779,  $p=0.049$ ).

**Conclusion:** It is suggested that the mental health of day laborers should be monitored during this pandemic.

**Key Words:** Generalized Anxiety Disorder; Sleep Quality; Day Laborers; COVID-19; Pandemic



## Insomnia and Social Psychological Factors among Medical Support Staff during COVID-19 Pandemic

F. Ahmed<sup>1</sup>, F. Akter<sup>2</sup>

<sup>1</sup>Dr. Faisal Ahmed, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Akter, Supervisor and Associate Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic caused not only great public health problems, but also enormous psychological distress, especially for medical staff.

**Methods:** This cross-sectional study aimed to estimate the prevalence rate of insomnia and to determine the social psychological factors among medical support staff (cleaner, cook, security guard, aya, ward boy) in hospitals from January to December 2020. Data were collected through face to face interview using a semi structured questionnaire containing questions related to insomnia, anxiety, depression, impact of event symptoms and other social factors from 289 participants purposively taken from Dhaka Medical College Hospital, Kurmitola General Hospital, Kuwait Bangladesh Friendship Government Hospital, Mugda Medical College Hospital and Tungipara UHC using Insomnia Severity Index, GAD-7 scale, PHQ-9 scale and IES-r with appropriate approval and consent from relevant authorities and personnel with full confidentiality. Chi-square test was done to reveal the associations between social psychological factors and insomnia symptoms.

**Results:** Majority of the participants (65.7%) were male, mean age was 31.09±8.9 years, 70.6% were married but none of them were illiterate where 64.4% of medical support staff worked at indoor and 51.2% required direct contact with feverish or COVID infected patients. Majority of them lived with their family and 64.7% of the participants or their family member got infected with COVID-19. Among the participants 19.4% had insomnia (total score≥8). Chi-square test revealed that insomnia symptoms were associated with uncertainty in effective disease control ( $p<0.001$ , OR=3.377, 95% CI=1.842-6.189), worry about getting infected ( $p<0.01$ , OR=2.748, 95% CI=1.457-5.181), presence of co-morbidities ( $p<0.05$ , OR=1.826, 95% CI=1.009-3.303), specially asthma/COPD ( $p<0.01$ , OR=3.220, 95% CI=1.489-6.963), generalized anxiety disorder ( $p<0.001$ ), depression ( $p<0.001$ ) and impact of event ( $p<0.001$ ). This study found that nearly one fifth of the medical support staff suffered from insomnia symptoms during the COVID-19 pandemic. The related factors included uncertainty in effective disease control, worry about getting infected, presence of co-morbidities, specially asthma/COPD, generalized anxiety disorder, depression and impact of event.

**Conclusion:** Hence, medical support staffs are the integral part of healthcare system, their health and wellbeing should be evaluated regularly for better healthcare service.

**Key Words:** Insomnia; Social Psychological Factors; Medical Support Staff; COVID-19; Pandemic



## Post-COVID Symptoms among COVID-19 Survivors in Bangladesh

P.K. Deb<sup>1</sup>, F. Akter<sup>2</sup>

<sup>1</sup>Dr. Piash Kumer Deb, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Akter, Supervisor and Associate Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Post-COVID symptoms appear on many survivors from COVID-19 which are similar to that of post-SARS fatigue, though there is limited investigation about the nature and prevalence of post-COVID symptoms.

**Methods:** This cross-sectional study was aimed to find out common post-COVID symptoms that appear after recovery from COVID-19. A total of 171 samples were included through purposive sampling in this study, a semi-structured questionnaire was developed based on C19-YRS and IES-r scale containing respondents' demographic data, co-morbidities, data about COVID-19 status and post-COVID symptoms. Data were collected through face to face interview, medical record review and over telephone in Dhaka Medical College Hospital and BSMMU.

**Results:** Among the respondents, 71.3% were male, 78.4% were married, majority (84.4%) followed Islam religion and 66.7% were graduated. About 90.1% of the respondents developed different post-COVID symptoms, fatigue (51.5%) was the most common. Other common symptoms reported were pain or discomfort (17.5%), difficulties in short term memory (26.9%), difficulties in concentration (22.2%), hair loss (14.6%), anxiety (18.1%), breathlessness (7.6%) and moderate PTSD (2.3%). There was an association between presence of co-morbidities and development of post-COVID symptoms. Among respondents having co-morbidities, 13.4% reported breathlessness (OR=7.09, CI=1.52-33.06), 63.8% reported fatigue (OR=2.57, CI=1.38-4.68), 26.2% reported pain or discomfort in the body (OR=3.24, CI=1.39-7.58) and 35% reported difficulties in short term memory (OR=2.184, CI=1.09-4.36). Severity of disease was found to be associated with development of some of these symptoms. Among the hospital admitted respondents, 38.3% reported difficulties in short term memory (OR=3.10, CI=1.52-6.32) and 21% reported increased hair loss (OR=2.72, CI=1.11-6.71). Increased age was associated with increased risk of fatigue ( $p=0.029$ ) and difficulties in short term memory ( $p=0.00$ ).

**Conclusion:** Subjects recovered from coronavirus disease should undergo long term surveillance and monitoring to evaluate and treat symptoms that might be precipitated with COVID-19. Early diagnosis of COVID-19 and supportive treatment at the end of acute phase of COVID-19 infection may help to overcome acute phase symptoms and prevent further consequences.

**Key Words:** Post-COVID Symptoms; COVID-19 Survivors; Bangladesh



## Preventive Behaviors among Pregnant Women regarding COVID-19 Infection

M.A. Rahman<sup>1</sup>, S. Halim<sup>2</sup>

<sup>1</sup>Dr. Md. Atiqur Rahman, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Shafiqul Halim, Supervisor and Head, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** A novel coronavirus disease (COVID-19) began its journey in late December 2019 from Wuhan, China and transmitted around the world. Women are vulnerable in health and this vulnerability is more at the time of pregnancy. During this time, women have to visit health care center for their regular ante natal care (ANC).

**Methods:** This cross-sectional study was performed to find out the level of preventive behaviors among pregnant women regarding COVID-19 infection during January to December 2020. A total of 96 pregnant women were selected conveniently, who came to Tetuljhora Union Health and Family Welfare Center (UH&FWC) for their regular ANC. Data were collected by face to face interview, record review and observation. The questionnaire was consisted of 32 questions including 10 items about COVID-19 related knowledge and 5 items 5 points Likert scale regarding preventive behaviors.

**Results:** Mean ( $\pm$ SD) age of the pregnant women was 23.14 ( $\pm$ 4.29) years and almost all of the participants (95.8%) were Muslims. More than half of the respondents (57%) had completed their secondary education. Most of the pregnant women (84.4%) were homemaker and more than three-fourth of the respondents (68.8%) came for first ANC. More than four-fifth of the respondents (84.4%) had moderate level of knowledge regarding COVID-19 infection and there was significant relationship between level of knowledge regarding COVID-19 infection and education of the respondents ( $p < 0.05$ ). More than three-fourth of the respondents (77.1%) had moderate level of preventive COVID-19 infection behaviors (PCIBs) and the relationship between level of PCIBs and education was statistically significant ( $p < 0.05$ ). Moderate level of PCIBs was found in more than two-third of pregnant women (69.8%) having moderate level of knowledge regarding COVID-19 infection and the association was statistically significant ( $p < 0.05$ ). It was evident that preventive behaviors regarding COVID-19 infection among pregnant women were statistically associated with education, level of knowledge regarding COVID-19 infection and occupation.

**Conclusion:** Government should assure that health care services to be continued in adequate safety measures and arrange domiciliary ANC service during epidemic or pandemic situation like COVID-19 for infection prevention and control.

**Key Words:** Preventive Behaviors; Pregnant Women; COVID-19; Infection



## Risk Perception and the Practices towards COVID-19 among the Garment Workers

S. Akter<sup>1</sup>, S. Shaheen<sup>2</sup>

<sup>1</sup>Dr. Shamima Akter, Student of MPH (Epidemiology) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Shafia Shaheen, Supervisor and Assistant Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Coronavirus disease 2019 is caused by novel coronavirus (SARS-CoV-2) and the World Health Organization declared it as Public Health Emergency of International Concern (PHEIC) on 30 January 2020. The prevention of transmission of COVID-19 depends upon the awareness and the perceived risk about it. The aim of the study was to assess the level of risk perception of being infected, the severity and the possibility of death by COVID-19 and the practices of preventive measures to fight against COVID-19 among the garment workers.

**Methods:** A cross-sectional study was conducted among the garment workers of selected garment industries, named BD Sky Composite Ltd, Tanzila Textiles, Rose Intimates and Jahangir Apparel Ltd. Convenient type of non-probability sampling technique was adopted to select the samples. Data were collected through face to face interview using a semi-structured questionnaire. A checklist was employed to observe the working environment of the garment factories.

**Results:** There were 305 respondents participated in the study with mean age  $28.4 \pm 5.7$  years. Among them 60% were female, 79.3% were married and most of the spouse's occupation was garment workers. Among the respondents, 41% were living with nuclear family and 39.7% living in sublet. The mean monthly family income was  $18171.15 \pm 7249.41$  taka. The respondents were well known about COVID-19 as a viral, contagious disease; more than 94% knew that coronavirus infected patient needs isolation. Majority of the respondents (86.2%) got information about COVID-19 from television. Most of the respondents (80%) had high risk perception of being infected, severity of the disease and possibility of death. Among the respondents, 76% had good practices of preventive measures of COVID-19. The study result showed that the level of risk perception had a significant positive relationship with the level of practices towards COVID-19 among the garment workers.

**Conclusion:** It was recommended that emphasis should be given on awareness about COVID-19 which will enhance perceived risk and practices of precautionary measures towards COVID-19.

**Key Words:** Risk perception; Practices; COVID-19; Garment Workers





## Client Satisfaction with Telemedicine Service during COVID-19 Pandemic

N.J. Tasmia<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Dr. Nurtaj Jarin Tasmia, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The ongoing COVID-19 pandemic has drastically impacted the health care delivery system and has accelerated the adoption of telemedicine globally. Client satisfaction is deemed important for telemedicine because it can effect the success and degree of application of telemedicine services. The aim of the study was to assess the state of client satisfaction with telemedicine service during COVID-19 pandemic.

**Methods:** This study was a descriptive type of cross-sectional study. A total of 113 respondents were selected purposively from the MIS of DGHS who received telemedicine service. Data were collected through telephone interviews by using a semi-structured questionnaire and data were analyzed with the help of SPSS (version-23).

**Results:** The findings revealed that among 113 respondents, majority (63.7%) were in the 30-39 years age group and also majority were female (60%). Almost all respondents were from outside of Dhaka, about 24.8% were from Mymensingh district. The overall client satisfaction with telemedicine service- 33.6% were very satisfied, 51.3% were satisfied, 10.6% were unsatisfied and 4.55% were very unsatisfied. Almost all respondents (93.8%) recommended to use telemedicine services in the future. Here, almost 70% of respondents used video and 30% audio. Almost all respondents received free telemedicine service. About 24.8% of respondents used telemedicine for COVID-19 related problems. The highest satisfaction was reported by respondents- treatment method 60%, service quality 62%, communication with physicians 57.5%, client privacy 81.6%, appointment system 65% and prescription format in digital form 54.9%. The effectiveness of telemedicine services- the main benefit was reduced distance 39.8%, reduced healthcare cost 81.4% and same as person-visit 56.6%. Regarding the barrier to telemedicine services- 86.7% lack ICT literacy, 77% shortage of ICT access and 70.8% thought inaccurate diagnosis due to the inability of client physical examination.

**Conclusion:** The ongoing COVID-19 pandemic has made a drastic change in our healthcare delivery system and accelerated the adoption of telemedicine service more firmly. In this study, most of the clients were found satisfied with telemedicine service during the COVID-19 pandemic. Implementing client satisfaction surveys is important to improve the quality of the healthcare system and strengthen the telemedicine service.

**Key Words:** Client Satisfaction; Telemedicine Service; COVID-19; Pandemic



## Depression among COVID-19 Recovered Patients

M.K. Khatun<sup>1</sup>, N. Farhana<sup>2</sup>

<sup>1</sup>Mst. Khadeza Khatun, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Nasreen Farhana, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Mental health problems have significantly increased worldwide during the coronavirus disease (COVID-19) pandemic. The COVID-19 pandemic has also affected people's economic status, healthcare facilities and other lifestyle factors in Bangladesh. The aim of the study was to assess the state of depression among COVID-19 recovered patients.

**Methods:** A descriptive cross-sectional study was conducted among 325 respondents attending on post COVID units in Dhaka Medical Collage Hospital and Dhaka North City Corporation Hospital from 1<sup>st</sup> January to 31<sup>st</sup> December 2021.

**Results:** Among total 325 respondents, the mean age of the respondents was 44.34±13.87 years. Majority of the respondents were male (61.5%). Among them, 75.7% were married, 21.2% completed graduation, 70.5% had less than 5 family members, 61.5% came from urban, 81.5% belonged to nuclear family. Among the respondents, 31% experienced depressive symptoms including 26.8% were mildly depressed, 2.5% were moderately depressed and 1.2% were severely depressed. In this study, results showed that depression of the respondents was found to be significantly associated with educational qualification ( $p=0.001$ ), duration of hospitalization ( $p=0.007$ ), being affected by posts on social media about COVID-19 ( $p=0.000$ ), fear of losing job ( $p=0.013$ ), feeling of being harmful to their family members ( $p=0.000$ ), fear of further contamination ( $p=0.003$ ), interruption of personal life by COVID-19 ( $p=0.000$ ), dyspnea ( $p=0.007$ ) and weakness ( $p=0.011$ ).

**Conclusion:** This study provided an idea about the mental health of the Bangladeshi population during the COVID-19 pandemic. The findings of the study recommend the need for reducing these psychological suffering. Psychological protective measures, safety and preparedness plan should be implemented by the concerned authorities and intensified psychological counseling should be provided to patients.

**Key Words:** Depression; COVID-19; Recovered Patients



## Evaluation of Triage System in a Dedicated COVID-19 Hospital

S.S. Mouly<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Shohana Shobnom Mouly, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Koorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic has placed substantial burdens on health systems globally. To combat COVID-19 transmission, an effective triage system is essential in resource constrained countries like Bangladesh. The purpose of the study was to determine the status of triage system in a dedicated COVID-19 hospital.

**Methods:** This cross-sectional study was conducted among conveniently selected 150 respondents including 63 doctors, 72 nurses and 15 administrative staff. Data were collected through face to face interview using a pretested semi-structured questionnaire and an observation checklist. The collected data were processed and analyzed with the help of SPSS (Version 26) and Microsoft Excel 2019. The study was conducted at Kurmitola General Hospital during the period from January to December 2020.

**Results:** Among study participants, 54% of the respondents belonged to 31-40 years age group, 74% were female and 50.7% of the respondents' working duration was 0-4 years. Among them, 67% of the respondents had training on triage system. All of the respondents mentioned that there was presence of triage system in this hospital but there was no tele-triage. Regarding infrastructure facilities like triage room, sitting facilities with 1 meter distance in waiting area, one way entrance and exit, separated ticket counter & washroom and proper hand wash facilities all were present in this hospital. All of the respondents mentioned the presence of available logistic support for triage system in this dedicated COVID-19 hospital including sufficient supply of PPE, thermometer and pulse oximeter. All doctors and nurses wore PPE. Majority (87.3%) of the respondents mentioned that there was no training on donning and doffing procedure of PPE. There were statistically significant associations between training on triage with age group and occupation of the respondents ( $p < 0.05$ ). Ideal working time of healthcare providers was not maintained. There was no facilities of isolated accommodation and health checkup for staffs. But RT-PCR for COVID-19 test was done for all staffs when he/she returned to normal life after duty.

**Conclusion:** Based on study findings it had been concluded that the infrastructure facilities and logistic supports were sufficient. But staff management had to be improved and the authority should pay special attention for effective triage system.

**Key Words:** Evaluation; Triage System; COVID-19; Hospital



## Experiences of Physicians in providing Dental Health Care during COVID-19 Pandemic

J.P. Nitu<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Jami Parvin Nitu, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Physicians are playing a very crucial role in this pandemic. It is essential to know their first-hand experiences in their day-to-day practice in providing dental health care. The aim of the study was to explore the experiences of physicians in providing dental health care during COVID-19 pandemic.

**Methods:** The cross-sectional study was conducted among 171 conveniently selected participants from January to December 2021 at Dhaka Dental College Hospital, Dhaka. Data were obtained by providing a pre-tested self-administered structured questionnaire and processed followed by statistical analysis.

**Results:** Among the respondents, 47.9% belonged to the age group of 31-40 years with higher proportion of female (57.8%). Among all, 31.4% had post-graduate degree. About 41.1% employed in the hospital and 53% of them were working in the hospital for less than 1 year. More than 90% of the respondents took history of COVID-19 symptoms and restricted visitors but only 39.5% limited aerosol generating procedures as precaution. One-third (33.7%) of the respondents used full set of PPEs, 47.5% of them felt breathlessness during wearing PPE. Among the respondents, only 47% got hospital provided PPE. A relationship was found between employment status of the respondents and getting hospital provided PPE which was statistically significant ( $p < 0.001$ ). Almost all of the respondents (96.8%) provided service during lockdown, among whom 26.5% used public transport to reach workplace. About 45.4% faced difficulties in transportation due to unavailability. About 73% of the respondents tested COVID-19 positive and 83% had to go for self-isolation with history of being exposed with infected patients. Almost all the respondents mentioned that hospital authority did not provide physical facilities during their isolation period. More than 95% mentioned that they felt fear of being infected. All the respondents mentioned that they were more concerned of their family members being infected and also felt worried that he/she might be the source of infection for their families.

**Conclusion:** The present study showed a considerable variety of experiences among physicians regarding dental health care provision during COVID-19 pandemic. Working environment and infection control measures are needed to reform on the basis of experiences that the physicians faced during the COVID-19 pandemic.

**Key Words:** Experiences; Physicians; Dental Health Care; COVID-19; Pandemic



## Health Care Personnel Management in COVID-19 Dedicated Tertiary Public Hospitals

A. Afroz<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Ahlina Afroz, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The healthcare personnel (HCP) worked as frontline service providers to the COVID-19 patients during the pandemic. Studies on assessing the management plan of the HCP in Bangladesh are not frequent. The study aimed to assess the state of health care personnel management in COVID-19 dedicated tertiary public hospitals.

**Methods:** This cross-sectional study was done among conveniently selected 231 HCP from two COVID-19 dedicated tertiary hospitals. Kurmitola General Hospital (KGH) and Shaheed Suhrawardy Medical College Hospital (ShSMCH) were the study places. Data were collected through face-to-face interview using a semi-structured questionnaire and an observation checklist.

**Results:** Among the service providers, 88.3% were less than 40 years of age and 81% were graduates. Of the respondents, 46.3% were experienced serving COVID-19 patients for more than one year. About 69.3% of HCPs got a 14-days quarantine period and 42.4% didn't perform quarantine after each duty roster. About 60.2% used public transport to commute between their home and workplace. Among the respondents, 64.5% received government-provided incentives. About 36.8% of the respondents were COVID-19 infected (32.5% infected once, 4.3% infected more than once). Among the infected HCPs, 60% were treated at home and 38.8% received government-funded treatment. About 73.2% of HCPs told the hospitals were cleaned using the IPC rule and of them, 84.9% found the daily surveillance of the IPC team. About 41.1% of HCPs hadn't read any COVID-19 related guidelines. Performing quarantine was statistically significantly associated with reading guidelines ( $p < 0.001$ ). The HCPs who read the COVID-19 guidelines were more interested in quarantine. Only 77.5% of the respondents received training and most of them (92.2%) found the provided training useful. About 75.8% of HCPs felt exhausted while serving the patients. Exhaustion due to fear of being infected was statistically associated ( $p < 0.001$ ) with the regularity of the IPC surveillance. Those who observed the daily IPC surveillance were less afraid (27.7%) of COVID-19 illness. About 64.5% HCPs experienced a manpower shortage. Among the HCPs, 77.5% found supportive colleagues and 93.1% found that departments were well-coordinated to serve COVID-19 patients. Among the HCPs, 80.1% found a quality improvement team. The hospitals were found lacking in using a thermal scanner, providing hand sanitizer and restricting entrance without a mask.

**Conclusion:** More focus on training the HCPs, encouraging them to read the COVID-19 guidelines, support measures to ensure their good health and providing incentives to inspire them to serve is recommended.

**Key Words:** Health Care Personnel; Management; COVID-19; Tertiary Public Hospitals





## Health-seeking Behavior of Adult Cancer Patients and Perceived Barriers during COVID-19 Pandemic

N.A.S. Rahman<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Nur-A-Safrina Rahman, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The study aimed to assess the health-seeking behavior of adult cancer patients and perceived barriers during COVID-19 pandemic.

**Methods:** This cross-sectional study was conducted among 210 conveniently selected participants at the National Institute of Cancer Research and Hospital and Ahsania Mission Cancer and General Hospital, Dhaka from January to December 2020. Data were obtained through face-to-face interview using a pre-tested semi-structured questionnaire and processed followed by analysis using SPSS (Version 26).

**Results:** Among the respondents, 56.2% were male, 28.6% belonged to 46-55 years of age and 36.7% did not get any formal education. About 52.3% chose public health facilities and 6.2% took advice from homeopathy and pharmacy upon the appearance of symptoms. The scheduled appointments were missed by 88.1% and 78.3% did not take any measure for it. The key barriers to seek healthcare were finding transport-77.1%; reduced family income-59%; lack of financial support-53.4% and mental support-56.6%. Conversely, respondents did not consider as barriers to seek healthcare were lack of awareness of people-80%, risk of getting sick from other patients-84.7%; risk of getting sick from healthcare providers-82.4% and overcrowding in the hospital-64.8%. Although 95% of respondents viewed COVID-19 as highly dangerous and 82.4% considered themselves to be at high risk, 73.8% did not worry about becoming infected while 95% were worried about their families getting infected. Nearly 45% agreed that COVID-19 affected their treatment and 56.7% were worried about getting healthcare if they became sick from COVID-19 and a significant association was found between these variables ( $p=0.004$ ). However, 59% stated wearing mask was important but seemed unable to maintain other preventive steps properly such as 70% sometimes maintained social distance. Healthcare providers were considered as highly competent regarding maintaining precautionary steps-99.5% and informing them about their health situation-85.3%.

**Conclusion:** Despite the barriers and dangers associated with the pandemic, cancer care has remained the top priority for patients. Cancer care requires continuity and cancer patients are at high risk to develop COVID-19. If concerned authorities adjust measures based on the real needs of the population, it will be very beneficial for them.

**Key Words:** Health-seeking Behavior; Adult; Cancer Patients; Perceived Barriers; COVID-19; Pandemic



## Job Satisfaction of Supporting Staff in a Selected Tertiary Hospital during COVID-19 Pandemic

M.A. Rahman<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Dr. Md. Azizur Rahman, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Healthcare workers (doctors, nurses and supporting staff) are confronted with unprecedented occupational and hazardous challenges caused by the ongoing COVID-19 crisis coupled with the fear of being infected by SARS-CoV-2. An effectively operating health system isn't attainable without a satisfied team. Dissatisfied healthcare professionals are not stable and always search for higher opportunities that hampers the expected healthcare outcome. The purpose of this study was to assess the job satisfaction of supporting staff in a tertiary Medical College Hospital in Dhaka during COVID-19 pandemic.

**Methods:** A descriptive cross- sectional study was conducted from 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2020 in Shaheed Suhrawardy Medical College Hospital in Dhaka. Data were obtained through face to face interview by using a general information questionnaire as well as Minnesota Satisfaction Questionnaire (MSQ) and analyzed by using SPSS 26.

**Results:** Result showed that among respondents, 58% were male and 42% were female, a large portion (64.7%) of them were in 20-30 years age group, 20% respondents were graduate and majority (92%) of them were Muslim. Among the participants, 47.3% MLSS, 16.7% cleaner and 36% technician showed good level of satisfaction about work place policy, maintaining moral values at workplace, safety measures taken by hospital authority to minimize cross-infection and others were somewhat satisfied about promotion opportunity and social status. However, the findings of this study revealed dissatisfaction of participants about performance appreciation and job stability. There were significant relationships between job satisfaction and educational status ( $p=0.000$ ), age ( $p<0.05$ ), form of participation ( $p<0.05$ ) in COVID-19 patient management. The average job satisfaction score of the participants was  $(43.13 \pm 12.009)$ .

**Conclusion:** For improving their job satisfaction, special attention is required to their promotional opportunity according to educational qualification and work experience. Also, further evaluation and reinforcement of relevant human resource policies could be undertaken.

**Key Words:** Job Satisfaction; Supporting Staff; Tertiary hospital; COVID-19; Pandemic



## Job Stress of Nurses working in COVID-19 Dedicated Hospital

L. Akter<sup>1</sup>, J. Akther<sup>2</sup>

<sup>1</sup>Lovely Akter, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Jabin Akhter, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** During COVID-19 pandemic, the medical staff especially nurses suffered badly from the stresses of COVID-19. During COVID-19 pandemic nurses have to serve as front liner in adverse environment that may result stresses. Job stress exists in every profession, nevertheless, the nursing profession appears to experience more stress at work compared to other health care workers. The purpose of this study was to assess the level of job stress of nurses working in COVID-19 dedicated hospital.

**Methods:** A cross-sectional study was conducted among 213 nurses from Mugda Medical College Hospital and Shaheed Suhrawardy Medical College Hospital for a period of one year, January 2020-December 2020. Using a structured questionnaire, data were collected through face to face interview. Job related questions of 26 items adapted from Expanded Nursing Stress Scale (ENSS) which was developed by Gray Toft and Anderson. The level of stress was calculated by summing the total score of all subscales and classified as follows: low stress with total score 28-52, moderate stress 53-63 and high stress 54-99. SPSS version 25 was used for data analysis.

**Results:** In this study, the mean age of participants was 36±6.35 years which range from 24-49 years. Most of them (96.2%) were female and 94.4% of nurses were senior staff nurse. Among the respondents, 84% were married. Majority (75.6%) of the respondents were Muslim and 52.6% of the respondents had diploma in nursing. Around 46% respondents had a working experience of 5-10 years. Approximately 80.8% nurses' working experiences as a frontline worker were more than six months. Regarding the factors related to stress, 78.4% respondents mentioned patient overload in working unit. About 63.4% nurses faced stigma due to COVID-19 and 57.7% respondents mentioned lack of staff co-operation and 51.6% respondents mentioned shortage of staff. In this study, 49.8% respondents were found in moderate stress and 25.8% respondents were found in low stress and 24.4% of the respondents were found in high stress level.

**Conclusion:** Overall findings of the study will help the frontline healthcare workers as well as policy makers to focus on reducing the job stress, thus improving the quality of work life at the workplace. It is vital to reduce nurses' job stress because this has impact on both improving quality of patients' care and ensuring adequate nursing workforce to meet healthcare needs.

**Key Words:** Job Stress; Nurses; COVID-19; Dedicated Hospital



## Job-Related Stress of Nurses serving Cancer Patients in a Specialized Hospital during COVID-19 Pandemic

A. Biswas<sup>1</sup>, M.K. Amin<sup>2</sup>

<sup>1</sup>Auparna Biswas, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Muhammad Kamrul Amin, Supervisor and Associate Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Job-related stress exists in every profession, nevertheless, the nursing professionals appears to experience more stress at work compared to other health care workers. An oncology nurse is a specialized nurse who works closely with oncologists to care for patients of all ages who have been diagnosed with cancer and it is a stressful work. The objective of the study was to assess the job-related stress of nurses serving cancer patients in a specialized hospital during COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted among purposively selected 285 nurses from the National Institute of Cancer Research and Hospital for one year from January 2021 to December 2021. Using a semi-structured questionnaire, data were collected through face-to-face interviews and job-related stress was measured by Expanded Nursing Stress Scale. Data were analyzed by SPSS (version 23).

**Results:** In this study, the mean age of participants was 32.94 ( $\pm 7.84$ ) years which ranged from 29 to 35 years. Among all, 91% of respondents were female and 52.6% had educational qualification of diploma in nursing. Among the respondents, 78.2% were married. The majority (71.9%) of the respondents were Muslim. This study revealed that 52.3% of the respondents were infected with the coronavirus, 59.6% of respondents got adequate PPE, and 81.1% of the respondents received COVID-19 vaccination. In this study, 74% were found to have low stress, 20.7% were found to have moderate stress and 5.3% of respondents were found to have high stress.

**Conclusion:** Overall findings of the study will help the frontline nurses and policymakers focus on reducing job stress, thus improving the quality of life of frontline health workers who serve cancer patients during the COVID-19 pandemic.

**Key Words:** Job-Related Stress; Nurses; Cancer Patients; Specialized Hospital; COVID-19; Pandemic



## Knowledge and Practice of Healthcare Workers on Management of COVID-19 Service Induced Waste in Tertiary Public Hospital

M. Rani<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Monika Rani, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The emergence of COVID-19 has led to the increase of medical waste all around the world. Improper management of this waste poses serious risks of disease transmission to health workers, patients and the community in general through exposure to infectious agents. The study aimed to assess the state of knowledge and practice of healthcare workers on management of COVID-19 service induced waste in tertiary public hospital.

**Methods:** The study was a cross-sectional study conducted from January to December 2021 in Dhaka Medical College Hospital (DMCH). A total of 242 health care workers especially nurses, doctors & supporting staffs were included in this study by convenient sampling technique. A semi-structured questionnaire was used to collect data by face-to-face interview. An observation checklist was filled up after observing the respondents during the data collection period.

**Results:** The mean age of the respondents was 37.3 ( $\pm 7.8$ ) years where 63.2% were female. Among the 242 respondents, 81.4% had knowledge on type of medical waste. Though, 100% respondents knew that patients were sources of medical waste, 69.8% respondents knew that cleaner and supporting staff were sources of medical waste, 93.4% had knowledge on segregation process. Among the 242 respondents, 86.8% had knowledge on color code bin and 66.9% respondents had knowledge on recycle. Correct sequence of wearing (donning) and removing (doffing) PPE kit were followed by 76.4% and 72.3% respondents respectively. According to the types of wastes, color coding of containers was always followed by 91.7% respondents. Doctors and nurses had significantly better knowledge than supporting staffs regarding types of medical waste ( $p=0.044$ ) and segregation process ( $p=0.009$ ). Doctors and nurses had significantly more adequate practice than Aya/ward boy and housekeeping regarding wearing cap ( $p<0.001$ ), correct donning ( $p<0.001$ ), correct doffing ( $p<0.001$ ), following color coding of containers according to the types of wastes ( $p<0.001$ ), following waste separation ( $p<0.001$ ), taking care in preventing sharp waste related injury ( $p<0.001$ ) and preventing contamination while handling patients ( $p<0.001$ ).

**Conclusion:** The knowledge and practice of health care workers on management of COVID-19 service induced waste were found satisfactory. As a recommendation to improve this situation, continuous training should be made compulsory for healthcare personnel specially supporting staffs working in DMCH.

**Key Words:** Knowledge; Practice; Healthcare Workers; Management; COVID-19; Waste; Tertiary Public Hospital





## Knowledge of Nurses in COVID-19 Patients Management in a Tertiary Level Hospital

F. Akter<sup>1</sup>, N. Farhana<sup>2</sup>

<sup>1</sup>Farjana Akter, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Nasreen Farhana, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 is a newly emergent disease. It was first recognized in Wuhan, China, in December 2019. Since its outbreak, it has been spreading globally with severe impacts on health and economy. During an outbreak, nurses play positive roles in improving the recovery rate, reducing the length of the hospital stay, mortality and preventing in-hospital infection and occupational exposure.

**Methods:** A cross-sectional study was conducted among 320 nurses from January to December 2020 to assess the level of knowledge of nurses in COVID-19 patient's management in a tertiary level Hospital named Faridpur Medical College Hospital, Faridpur, Bangladesh. Convenient sampling technique with a pretested structured questionnaire was used and face to face and telephone interview was done to collect data and  $p < 0.05$  was set as statistically significant. The knowledge scores were assessed by 31 questions and categorized into good ( $\geq 80\%$ ), fair (51-80%) and poor ( $\leq 50\%$ ) with considering (50%) as a cut off value level.

**Results:** Among the 320 respondents, the mean age was 22.5 ( $\pm 4.9$ ) years and 93.1% were female. Of them, 48% respondents had collected information about COVID-19 from electronic media and 52% had good knowledge on COVID-19. About 97% respondents had good knowledge on management facilities and 52% respondents had good knowledge on COVID-19 prevention and control. On the other hand, 61% of respondents had fair knowledge on COVID-19 patient management and 37% had good knowledge on COVID-19 patients management. Highest (33.4%) respondents had received training on COVID-19 patients management and 36.6% of the respondents had received training on donning and doffing. Among the respondents, 64.1% had been previously tested positive for COVID-19. There was a significant association found between work experience and level of knowledge on prevention and control of COVID-19 ( $p < 0.003$ ). Also there was a significant association present between educational qualification and level of knowledge on prevention and control of COVID-19 ( $p < 0.0076$ ).

**Conclusion:** Providing sufficient training on COVID-19, adequate supply of PPE and medical and psychological support to all nurses will improve the COVID-19 patient management capacity and reduce hospital burden.

**Key Words:** Knowledge; Nurses; COVID-19 Patients; Management; Tertiary Level Hospital



## Management of Emergency Department of COVID-19 Dedicated Tertiary Public Hospitals

Q.U.L. Haque<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Quazi Umme La-Sani Haque, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The study aimed to assess the state of the management of emergency department of COVID-19 dedicated tertiary public hospitals.

**Methods:** The cross-sectional study was conducted among 201 conveniently selected participants from January to December 2021 at the Dhaka Medical College Hospital and Kurmitola General Hospital, Dhaka. Data were obtained using a pre-tested structured questionnaire by face-to-face interview and an observation checklist. Data were processed followed by analysis using SPSS (Version 26) and Excel 2019.

**Results:** Among the respondents, 47.3% belonged to age group 31 to 40 years and the mean age of the respondents was  $34.6 \pm 5.4$  years. 69.2% of the respondents were female and remaining 30.8% were male. 43.3% respondents were doctors and remaining 56.7% respondents were nurses. 88.6% were married and 11.4% were unmarried. 29.9% respondents' total job duration was 7 to 10 years. Among them 41.8% doctors and nurses were graduate, 24.4% doctors and nurses received post-graduation and 38.8% nurses were diploma nurses. Among the respondents, 72.6% resided rental, 17.9% were owner and 9.5% respondents resided in government quarter. More than half (61.2%) belonged to joint family. All of the respondents mentioned that presence of almost all of physical facilities in emergency department in these hospitals but there was no separate room for dressing (79.1%), plaster (80.1%) & burn (77.6%). Majority (97.5%) of the respondents mentioned total number of beds in ED was 1 to 10 in number, more than two third (77.1%) respondents mentioned 6 to 10 doctors gave duty per shift and more than half (66.7%) respondents mentioned 11 to 20 nurses gave duty per shift. Departmental communication procedure by using social media was 85.6% and 34.8% doctors and nurses were given no training. Regarding triage system of emergency department, 100% facilities were present. All doctors and nurses wore PPE, followed personal health safety and disinfection procedure. About 98% respondents were vaccinated with 2 doses of vaccine. But duty roster of doctors and nurses was different in those hospitals.

**Conclusion:** Based on study findings and dangers related to the pandemic, it has been concluded that there were presence of all physical facilities, services, triage system and personal health safety in COVID-19 dedicated tertiary public hospitals. Periodic formal training programs should be reinforced and departmental communication procedure should be strengthened through social media.

**Key Words:** Management; Emergency Department; COVID-19; Tertiary Public Hospitals



## Mental Stress and Coping Strategies among Physicians working in Dedicated COVID-19 Hospital

F. Ahmed<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Farhana Ahmed, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The study was aimed to assess the mental stress and coping strategies among physicians working in dedicated COVID-19 hospital.

**Methods:** A descriptive cross-sectional study was conducted among conveniently selected 207 physicians working in four dedicated COVID-19 hospitals (Public hospital-2 & Private hospital -2) in Bangladesh from January to December 2020. Data were collected through telephone interview using a pre-tested semi-structured questionnaire. Mental stress was assessed by Perceived Stress Scale (PSS-10) and coping by coping scale.

**Results:** Among the respondents, 54.1% were male, 84.5% were Muslims and 49.3% had lived in joint family. About 83.6% respondents had been working in COVID-19 dedicated public hospitals and 16.4% in COVID-19 dedicated private hospitals and labs. Around 97% respondents had suffered from interruption of personal life, 96.1% had interruption of working life due to COVID-19 and 89.3% respondents thought themselves harmful to their families. About 87.6% respondents avoided contact with colleagues, 36.2% always avoided to go home and lived in hotels or other apartments to prevent their families from spreading diseases. Overloaded information conveyed by media affected 46.2% respondents and 7.2% private physicians had fear of losing job. Chi-square test revealed significant association between respondents who thought themselves harmful to family members and their sleeping disorders and panic feeling during sleeping time. To cope with these mental stresses, 99.5% got support by talking over phone with friends and family, 98% respondents felt that assurance of family safety is good strategy to these circumstances, 94.2% used prayer as meditation and 91.7% used proper sleep as meditation or relaxation. Hand washing were practiced by 99.5% physicians and 98% physicians wore masks for self-care and prevention of transmission of COVID-19, There was significant association between mental stress and coping strategies ( $p=0.043$ ). Around 46.4% respondents had medium perceived stress by PSS and 55.1% had good coping by coping scale. The mean score of mental stress was  $24.57 \pm 6.18$  and cope  $40.00 \pm 44.73$  which meant medium perceived stress and good coping.

**Conclusion:** Psychological protective measures, safety and preparedness plan implemented by the concerned authorities are needed to be intensified and psychological counseling through telemedicine should be provided to physicians.

**Key Words:** Mental Stress; Coping Strategies; Physicians; COVID-19; Hospital



## Mental Stress of Nurses involved in Nursing Care of COVID-19 Patients

M.S. Kanan<sup>1</sup>, K. Akhtar<sup>2</sup>

<sup>1</sup>Mohshina Sharmin Kanan, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Khursheda Akhtar, Supervisor and Associate Professor (Reproductive and Child Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Among all healthcare professionals, nurses play an extraordinary role in combating COVID-19, which turned into a pandemic in a short time. Nurses are constantly facing with stressful situations that causes emotional exhaustion while managing complex care and treatment processes. The objective of the study was to assess the job-related factors of nurses, to determine the level of perceived stress of nurses and to find out the associated factors related to mental stress of nurses who were involved in nursing care of COVID-19 patients.

**Methods:** A descriptive cross-sectional study was designed to conduct this research among nurses. The study had been conducted in Shahid Sayed Nazrul Islam Medical College Hospital, Kishoreganj and 250 bedded General Hospital located in Sunamganj city of Bangladesh. Convenient sampling technique had been applied and a pre-tested semi-structured questionnaire had been used in this study.

**Results:** A total 382 respondents were included in this study with the mean age of 27.01 ( $\pm 2.7$ ) years. Majority of them (79.6%) were female and others (20.4%) were male. Among them, 48.2% were married, 51.6% unmarried and others were 0.3%. The major findings of the study showed that, 29% of nurses had low mental stress, 70% had moderate stress and 1% had high mental stress. The mean stress was  $15.8 \pm 4.51$ . Nurses who were  $\leq 27$  years, had high stress than those who were  $> 27$  years. Lower educated nurses were highly stressful. Nurses with monthly family income  $\leq 45,000$  TK, were highly stressful than those with monthly family income  $> 45,000$  TK. Nurses who worked in each shift equally were highly stressful. Nurses lived in joint family (39.26%) and own home (71.2%), were highly stressful. Nurses who had done COVID-19 test (82.19%), had not diagnosed with COVID-19 (59.68%), faced physical problem due to use PPE (85.86%), did not have enough colleague (43.19%), could not sanitize hand properly (18.32%), could not maintain social distance (36.64%), changed life style (79.84%) and lost their colleague (18.06%) were highly stressful than others.

**Conclusion:** The results demonstrated that working with the COVID-19 patients had a great impact to nurses' mental health. Providing mental support and basic needs to the nurses can play a vital role in maintaining mental health of nurses.

**Key Words:** Mental Stress; Nurses; Nursing Care; COVID-19; Patients



## Mortuary Service Preparedness in Tertiary Public Hospital during COVID-19 Pandemic

N. Jahan<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Nusrat Jahan, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Hospital mortuary is a very important component and mortuary services are a key part of the package of services provided to deceased patients in hospital. For efficient functioning and maintenance, mortuaries and mortuary services must be set up to meet certain standards during COVID-19 pandemic. The aim of this study was to assess the state of mortuary service preparedness in tertiary public hospital during COVID-19 pandemic.

**Methods:** A descriptive cross-sectional study was conducted from January to December 2021 among conveniently selected 203 service providers who had provided mortuary service during COVID-19 pandemic at DMCH. Data were collected by using a pre-tested structured questionnaire and presented by frequency table, bar chart and pie chart.

**Results:** Among the respondents, 50.2% were from age group of 30-39 years, 60.6% were female, 86% believed in Islam, 58.1% were married. Length of service were below 5 years among 75% respondents, 93% worked less than 8 hours per day and 59% belonged to nuclear family. World Health Organization has issued an interim guidance on safe management of dead body in context of COVID-19. Regarding infrastructure facilities and logistics almost everything was available at DMCH. Among the respondents, 94.6% used PPE, 67.5% wore it during providing service and everyone felt difficulties during wearing PPE for long time. Around 89% replied lack of manpower was managed by both inter-departmental coordination and hiring them from another regional public hospital. Everyone replied they had isolation and quarantine facilities, 85.7% mentioned they had donning and doffing area and 86.2% replied they had got training on it from hospital. The majority (91.1%) replied they had 0.1% sodium hypochlorite solution or bleach solution for disinfection. Among the respondents, 88.2% replied they disposed of waste in accordance with waste management rules. Around 86% had got no training on dead body management. In this study, a statistically significant relationship was found between occupation and problems faced during providing service and also between sex of the respondent and training on donning and doffing.

**Conclusion:** Mortuary service preparedness was not up to the expectation during pandemic period. The findings of the study may help the authorities to take necessary precautionary steps for the improvement of the mortuary service as well as for the service providers during the COVID-19 pandemic.

**Key Words:** Mortuary Service Preparedness; Tertiary Public Hospital; COVID-19; Pandemic





## Nurses' Experiences in Service Provision a COVID-19 Dedicated Tertiary Public Hospital

S. Halder<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Suniti Halder, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** In December 2019, a newly evolved coronavirus was first recognized in Wuhan, China. As the incidence of COVID-19 was increasing, the Bangladesh Government announced a countrywide lockdown. Consequently, Front-line healthcare workers, particularly nurses were confronting more challenging situation at work.

**Methods:** This descriptive cross-sectional study was conducted in Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh, from January to December 2021. Data were collected through face-to-face interview using a structured questionnaire containing demographic details and experiences faced by the nurses in service provision during COVID-19.

**Results:** The findings revealed that the mean age of the respondents were  $32.35 \pm 7.24$  years, the minimum age was 23 years and maximum age was 58 years. About half of the respondents (52.1%) were in 21-30 years. Majority (89%) were female. More than half of the respondents (72.6%) were Muslim and 63.83% of respondents had completed Diploma in Nursing. About 32.2% respondents were living with senior citizen, 33% respondents were infected by COVID-19, 24.23% respondents mentioned nurse-patient ratio in general ward was 1:7 and 71.08% mentioned nurse-patient ratio in ICU/CCU was 1:3 (December 2021). PPE were available among 88% respondents and N95 mask were available among 84% respondents. About 34.8% respondents got COVID-19 guideline training and 32.4% got donning and doffing training. More than half of the respondents (76%) stated that equipment is adequate, 56.38% respondents mentioned insufficiency of nurses and 53.7% mentioned insufficiency of subordinate staff. About 22.6% respondents faced social stigma and majorities (96.5%) mentioned they got proper family support. There was a significant association found between professional educational qualification and satisfaction of current designation ( $p < 0.05$ ).

**Conclusion:** The most important experiences of nurses were lack of training, insufficiency of manpower specially nurses and subordinate staff, high nurse-patient ratio and fear about personal and family safety. The findings of the study will be helpful for the authority in planning for future course of action.

**Key Words:** Nurses; Experiences; Service Provision; COVID-19; Tertiary Public Hospital



## Opinion Survey regarding Facilities and Constraints in Provision of In-Patient Services in a Selected Infectious Disease Hospital during COVID-19 Pandemic

T.N. Chowdhury<sup>1</sup>, I. Ara<sup>2</sup>

<sup>1</sup>Dr. Tafhima Nasir Chowdhury, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Ismat Ara, Supervisor, Assistant Professor and Ex-Head, Department of Nutrition and Biochemistry, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Infectious diseases are important health conditions in Bangladesh causing significant suffering, disability and death. The coronavirus disease (COVID-19) can cause a significant strain on the healthcare system. Provision of healthcare facilities by hospital authority can improve the quality of in-patient services. Thus, the aim of this study was to identify facilities and constraints in provision of in-patient services in a selected infectious disease hospital.

**Methods:** A cross-sectional study was carried out among doctors and nurses at Infectious Disease Hospital (IDH) from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. Data were collected by a semi structured questionnaire. A total of 121 respondents were enrolled as study sample by convenient sampling.

**Results:** Among 121 respondents, mean age was 44 ( $\pm 8.97$ ) years where 41.3% were in age group of 40-49 years, 27.3% were in 50-59 years, 23.1% were in 30-39 years and 8.3% were in 20-29 years of age group. About 80.17% were female and 19.83% were male. All of the respondents informed that hospital authority provided screening facilities, soap and water for their hand hygiene, maintained 1 meter distance between beds. Majority (99.2%) of the respondents informed that hospital had isolation ward. About 91.7% respondents informed, they didn't have proper donning and doffing facilities. About 52.9% respondents informed that hospital authority didn't ensure staff receiving training on airborne precautions and 47.1% respondents informed that regular arrangement of training was ensured. About 89.3% respondents informed that hospital authority did not provide adequate supplies of full PPEs. About 95% respondents informed that their hospital did not have adequate supply of portable pulse oximeter. More than half (52.1%) of the respondents informed that, the number of doctors working in the hospital were not adequate and 47.9% informed that they had sufficient number of doctors available in the hospital. About 90.1% informed that the number of nurses, working in the hospital were not sufficient and 9.9% informed that there were sufficient number of nurses available. About 91.7% respondents informed, number of supportive staffs were not adequate and 8.3% informed that they had sufficient number of supportive staffs in their hospital.

**Conclusion:** This study suggested that facilities were provided by the hospital authority with some existing constraints. Therefore, identifying the constraints and overcoming them will help to improve the quality of in-patient services.

**Key Words:** Opinion survey; Facilities; Constraints; Provision; In-patient Services; Infectious Disease Hospital; COVID-19; Pandemic



## Out-of-Pocket Expenditure of Patients treated in COVID-19 Dedicated Public Hospitals

T. Tamanna<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Tanzina Tamanna, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Health care costs are a significant concern in developing countries like Bangladesh. The study aimed to estimate the out-of-pocket expenditure (OOPE) of treatment the coronavirus disease 2019 (COVID-19) in selected public hospitals.

**Methods:** This was a cross-sectional study conducted among 223 diagnosed COVID-19 patients treated in Dhaka Medical College Hospital (DMCH) and Shaheed Suhrawardy Medical College Hospital (ShSMCH) aged 18 years and above. Convenient sampling technique was used and data were collected from the respondents using a semi-structured questionnaire through telephone interview.

**Results:** Out-of-pocket expenditure for COVID-19 disease in selected hospitals was BDT 22582/-. Direct medical cost was BDT 11946/-, direct non-medical cost was BDT 5094/- and indirect cost was BDT 6085/-. Investigation cost and medicine cost constituted the highest portion of the direct medical cost, mean investigation cost was BDT 5862/- and mean medicine cost was BDT 4868/-. Cost for food, drinks and travel constituted the highest portion of the indirect cost. Mean cost for food and drink was BDT 3311/- and mean cost for travel was BDT 1909/-. Around 40% of the respondents were from age group 45-49 years and 60.1% of the respondents were male. Among the respondents, 33.2% were from DMCH and 67% are from ShSMCH. Around 53% respondents were from urban areas and rest were from rural and semi urban areas. Almost 43% of the respondents stayed for 10-15 days in the hospital. The relation between study place and unofficial payment of the respondents for wheel chair and trolley was statistically significant ( $p=0.006$ ).

**Conclusion:** The study indicated that the high amount of OOP expenditure was due to expenses incurred by investigations and medicine purchase along with food and travel costs. Establishing more accessible and affordable decentralized healthcare system for COVID-19 treatment along with implementation of health insurance for the poor are necessary for universal health coverage. This study will help the healthcare system policy makers to take appropriate steps towards minimizing the high burden of OOPE.

**Key Words:** Out-of-Pocket Expenditure; Patients; COVID-19; Public Hospitals



## Outpatient Service Provision in Tertiary Hospital during COVID-19 Pandemic

N. Jahan<sup>1</sup>, K. Akhtar<sup>2</sup>

<sup>1</sup>Dr. Nigar Jahan, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Khursheda Akhtar, Supervisor and Associate Professor (Reproductive and Child Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic is a challenge for healthcare professionals globally. The outpatient department is an important part of the overall running of the hospital. Service providers are facing tremendous difficulties and challenges due to sudden thrust of the pandemic. Despite these challenges, service providers have to give service during COVID-19 pandemic. The objective of the study was to assess the state of outpatient service in tertiary hospital during COVID-19 pandemic.

**Methods:** This cross-sectional study was conducted among conveniently selected 203 service providers including 156 doctors and 47 nurses. Data were collected through face-to-face interview using a semi-structured questionnaire and observation checklist. The collected data were processed and analyzed with the help of SPSS (Version 28). The study was conducted at medicine, surgery, paediatric and family planning outpatient department of Shaheed Suhrawardy Medical College Hospital, Dhaka Medical College Hospital and Bangabandhu Sheikh Mujib Medical University during the period from January to December 2021.

**Results:** Among service providers, 76.8% were doctors and 23.2% were nurses. All services were available during COVID-19 pandemic. Flu-corner and triage facility were available in ShSMCH OPD. Outdoor surgery, immunization service and shishu bikash kendro were open during COVID-19 pandemic. About 80.8% respondents mentioned about availability of adequate amount of personal protective equipment, 42.9% respondents mentioned about proper ventilation. Among respondents, 24.1% and 17.2% mentioned that they attended patients mostly with fever and flu-like symptoms. Among the respondents, 67% said they maintained physical distance during consultation with the patients. About 42.4% respondents said they received training during COVID-19 pandemic. About 57.6% respondents said about lack of manpower. About 61.6% respondents said they felt anxiety during providing service.

**Conclusion:** OPD was open during COVID-19 pandemic and all services were available. Special training regarding outpatient department during COVID-19 pandemic and digitalized equipment can help for better outpatient service during the pandemic.

**Key Words:** Outpatient Service Provision; Tertiary Hospital; COVID-19; Pandemic



## Pattern of Utilization of Personal Protective Equipment among Doctors and Nurses during COVID-19 Pandemic

H.T. Jannat<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Humaira Tul Jannat, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The study was conducted to assess the pattern of utilization of Personal Protective Equipment among doctors and nurses during COVID-19 pandemic.

**Methods:** This cross-sectional study was conducted from January to December 2020 among conveniently selected 157 respondents including 69 doctors and 88 nurses of Kurmitola General Hospital and Mugda 500 Bed General Hospital.

**Results:** Among 44% doctors, mean age of them were  $36.84 \pm 5.9$  years. Among them, 53.6% were female and 33.3% worked in in-patient department. Utilization of medical mask was 100% among doctors. Regarding usage of other protective equipment among doctors, 97.1% used N95 respirator, 98.6% used gloves and 98.6% used goggles or face shield. Coverall was worn by 91.3% doctors. Adherence to using PPE always was 50.7% among doctors. Double masks were worn by 69.6% doctors where 71.7% doctors wore surgical mask over the N-95 respirator. Double gloves were used by 80.9% of doctors. Regarding reuse, 59.4% of doctors reused their PPE where N95 respirator and goggle/face-shield were common. Total 51.2% of doctors reported reusing within 5 days to 8 days. Among 56% nurses, mean age of nurses were  $34.28 \pm 7.9$  years. Among them, 92% of the nurses were female and 39.8% worked in in-patient department. Utilization of medical mask was 100% among nurses. Regarding usage of other protective equipment among nurses, 95.5% used N95 respirator, 97.7% used gloves and 93.2% used goggles or face shield. Coverall was worn by 94.3% nurses. Adherence to using PPE always was 44.3% among nurses. Double masks were worn by 68.2% of nurses where 47.4% wore surgical mask over the N95 respirator. Double gloves were used by 86% nurses. Regarding reuse, 69.3% nurses reused their PPE where N95 respirator and goggle/face-shield were common. Total 65.6% nurses reported reusing PPE within less than 4 days. None of the doctors and nurses had ever undergone N95 respirator fit testing. Provision of all necessary PPE by the authority was a significant influencing factor mentioned by 93% of the both respondent groups. Among all, 78.3% doctors and 65.9% nurses reported hot weather as major barrier of using PPE. Regarding knowledge, 42% and 73.9% doctors had correct knowledge about donning and doffing steps respectively. Among nurses, 40.9% and 79.5% nurses had correct knowledge about donning and doffing steps respectively.

**Conclusion:** To achieve the proper utilization of PPE among doctors and nurses, periodic formal training programs should be reinforced and more awareness need to be raised about importance of wearing PPE.

**Key Words:** Pattern; Utilization; Personal Protective Equipment; Doctors; Nurses; COVID-19; Pandemic





## Perception of Slum Dwelling Adults regarding COVID-19 Vaccination

M.S. Mia<sup>1</sup>, I. Ara<sup>2</sup>

<sup>1</sup>Mohammad Sohag Mia, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Ismat Ara, Supervisor, Assistant Professor and Ex-Head, Department of Nutrition and Biochemistry, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The corona virus disease (COVID-19) pandemic has triggered the need to develop rapidly effective and safe vaccines that are the most important public health measures and most effective strategy to protect the population from COVID-19. The slum people are deprived from advanced medical facilities due to low socio-economic conditions. The government of Bangladesh has approved several vaccines for using against COVID-19 virus. The objective of this study was to assess slum dwellers' knowledge and perceptions towards COVID-19 vaccination.

**Methods:** A descriptive cross-sectional survey was conducted among 305 adult slum people using convenient sampling technique. A semi-structured questionnaire with questions on knowledge, perception of COVID-19 disease, COVID-19 vaccine and also socio-demographic characteristics was used in data collection. The chi-square test was applied to evaluate the associations among the respondents between knowledge and perception of COVID-19 vaccine. A 95% confidence interval was used and statistical significance was  $p < 0.01$ .

**Results:** Overall, the mean ( $\pm$ SD) age of the respondents was 35.39 ( $\pm$ 11.62) years. Out of 305 respondents, majority (70.8%) were male respondents, 94.4% were Muslim. 96.7% knew about mass COVID-19 vaccination campaign while only 35.7% believed vaccines to be effective in controlling COVID-19. Among the respondents, 71.8% received COVID-19 vaccine. Nearly 83.3% of respondents believed that COVID-19 vaccine had side-effects. Though over half of the respondents (60%) had the trust that the vaccines were safe for them, still a significant number as 40% of respondents had concern about vaccine safety. Additionally, about 45.1% respondents mentioned that, they would be naturally protected without vaccination.

**Conclusion:** The study revealed that about two-third received vaccination while others had not good conception regarding COVID-19 vaccination because of slum dwellers had a low literacy level, low adherence to health safety regulations and low confidence in healthcare system. Therefore, community health workers, community leaders, community influencers and non-governmental organizations can be utilized to motivate and educate people for vaccination against COVID-19 disease.

**Key Words:** Perception; Slum dwelling Adults; COVID-19; Vaccination



## Personal Hygiene Practices of Day Laborer during COVID-19 Pandemic

S. Kumar<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Sreekanto Kumar, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Koorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Personal hygiene is deemed as a necessary precautionary measure against different communicable diseases. Its importance is further reiterated during the current COVID-19 pandemic. Maintaining personal hygiene, such as wearing mask, washing hands, maintain social distance, avoiding touching face and sneezing etiquette are being considered as cost-effective means of precaution during COVID-19 pandemic. Thus, the present study was conducted to assess the knowledge, practices and barriers regarding personal hygiene among the day laborer population.

**Methods:** A descriptive cross-sectional study was conducted among 309 day-laborer using convenient sampling technique. Face to face interview guided by a semi structured questionnaire with questions on knowledge, practices and barriers to personal hygiene was used in data collection. Fisher's exact test was applied to evaluate the association between knowledge and practices of the respondents. Collected data were analyzed using Microsoft office excel 2016 and SPSS software (version 23). A 95% confidence interval was used and statistical significance was  $p < 0.001$ .

**Results:** Overall, the mean ( $\pm$ SD) age of the respondents was 35.62 ( $\pm$ 11.2) years. Majority of the respondents were male (78.6%). Findings showed that most of the respondents had good knowledge regarding COVID-19 in terms of source, transmission, wearing mask, hand wash, social distance, coughing etiquette and avoiding touching of face and nose. Additionally, most of the respondents (58.9%) had moderate practices on personal hygiene during COVID-19. Furthermore, most of the respondents wore face mask while going outside or meet someone. Only 1.9% respondents were wearing mask all time. About 83.8% noted lack of soap and water in their workplace as a barrier to maintain personal hygiene.

**Conclusion:** The study revealed that overall maximum proportion of respondents had good knowledge but having moderate practices with some barriers. Findings indicate there is need for optimizing personal hygiene practices through addressing barriers and promoting public health education.

**Key Words:** Personal Hygiene; Practices; Day Laborer; COVID-19; Pandemic



## Practice of Health Workers on Dead Body Management in Dedicated COVID-19 Hospitals

M.Z. Islam<sup>1</sup>, I. Ara<sup>2</sup>

<sup>1</sup>Md. Zahidul Islam, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Ismat Ara, Supervisor, Assistant Professor and Ex Head, Department of Nutrition and Biochemistry, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 is a burning issue as it has become a pandemic throughout the world. The world has been facing an unprecedented crisis as huge deaths are caused by COVID-19. All dead bodies are potentially infectious and standard precautions should be implemented for every case. The aim of this study was to assess the state of practice of health workers on dead body management in selected COVID-19 dedicated hospitals.

**Methods:** This descriptive type of cross-sectional study was conducted from January 2020 to December 2020 on total of 328 samples. Data were collected by a structured questionnaire and analyzed by SPSS software. This study was conducted in Dhaka Medical College Hospital and Mugda Medical College Hospital. World Health Organization (WHO) has issued an interim guidance on the safe management of a dead body in the context of COVID-19.

**Results:** This study found 45.7% of the respondents in age group 25-30 years, 65.5% female. Among the health workers, 74.4% nurse, 25.6% ward boy. Among them, 97% respondents answered they practised to provide hygienic care of dead body, 99.1% respondents removed medical device, 80.2% placed the dead body in leak-proof plastic body bag, 10.1% respondents received training about COVID-19 dead body management. Majority (98.2%) of respondents answered that they performed hand wash before and after care of dead body, 97.3% wore disposable gown, 100% used face mask, 98.8% used gloves. Among the respondents, 90.2% practised to handle medical waste carefully and dispose, 91.5% respondents were ensured about clean environmental surfaces, instruments and transport trolleys properly disinfected with 0.1% Hypochlorite solution. Here "Yes" response was counted as practice. Practice items' total score ranged from 0-36, with an overall greater score indicated more frequent practice of health workers. A cut off level of  $\geq 31$  was set for more frequent practices. Overall state of practice among health workers, 76.2% had more frequent practice and 23.8% had less frequent practice. There was significant association between occupation and state of practice on dead body management at COVID-19 hospitals ( $p=0.000$ ).

**Conclusion:** The finding of this study will be helpful to protect and to provide available information regarding practice of health workers on dead body management in COVID-19 dedicated hospitals.

**Key Words:** Practice; Health Workers; Dead Body Management; COVID-19; Hospitals



## Quality of Nursing Services for Cancer Patients at Outpatient Department in a Specialized Hospital during COVID-19 Pandemic

M.A. Khatun<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Most. Ayesha Khatun, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Cancer is one of the public health concerns in Bangladesh, with about two lacs patients newly diagnosed with cancer each year. The COVID-19 pandemic has imposed an enormous burden and massive challenges to the healthcare system, especially in oncology care in Bangladesh. The study aimed to evaluate the quality of oncology nursing care, as perceived by cancer patients attending out-patient department (OPD) in a specialized cancer hospital.

**Methods:** A cross-sectional study was carried out in OPD of National Institute of Cancer Research and Hospital (NICRH) from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. Data were collected with informed written consent applying convenient sampling technique with help of a pre-tested semi-structured questionnaire and by face-to-face interview. Quality of Oncology Nursing Care Scale (QONCS) was used to assess the quality of nursing services for patients and a checklist was used for facility assessment. Data were analyzed by SPSS.

**Results:** Among 51 enrolled nurses, mean age was 28.98 years, majority (96.1%) were female, 82% were married, 76% were Muslim, 96% were senior staff nurse, 69% had completed diploma in nursing. Though 82.4% nurses had work experiences of 1-10 years, 71% had no training either on oncology care or COVID-19 patient's care. Among the patients, mean age was 45.36±13.89 years, 52% were female patients, 36% educational status were illiterate, 91% were Muslim, 45.5% were housewife and 88% were married. Mean family income was 16933.33±17705.99 BDT, most of the respondents (62.7%) lived in the tin shed house. Quality was measured by assessing the gap score of expectation and perception of 5 domains. Mean score of the patients under expectation and perception was: being supported and confirmed mean score 4.21±0.87, the spiritual caring mean score was 2.08±1.35, sense of belonging mean score was 4.1±0.87, being valued mean score was 4.28±0.82, being respected mean score was 4.11±0.85.

**Conclusion:** Patients expectation and perception are quality oncology nursing services which is a need-based care. Among the five domains, the spiritual caring mean score was low. To improve quality of nursing care, training and outpatients' facility improvement should be focused. More comprehensive research is needed to understand the perceived quality of nursing care in NICRH.

**Key Words:** Quality; Nursing Services; Cancer Patients; Outpatient Department; Specialized Hospital; COVID-19; Pandemic



## Quality of Transport Services in Tertiary Public Hospital during COVID-19 Pandemic

M.A. Rimi<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Mahmuda Akter Rimi, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Early in the COVID-19 outbreak, the government of Bangladesh instituted a transport lockdown and restricted people's movement. Lack of proper transportation services, particularly for healthcare personnel and patients is a major concern for Bangladesh during COVID-19 pandemic.

**Methods:** This cross-sectional study was conducted among 307 (101 patients and 206 nurses) transport service receivers at Khulna Medical College Hospital, Khulna. Data were collected through face-to-face interview with the help of a semi-structured questionnaire to assess the state of quality of transport services in tertiary public hospital during COVID-19 pandemic. All ethical issues were maintained strictly in different stages of the study and informed written consent was taken from each patient.

**Results:** The result showed that, out of 307 respondents, 206 (67.1%) were nurses and 101 (32.9%) were patients and their mean age was  $35.07 \pm 8.45$  and  $43.86 \pm 14$  respectively. Out of 206 nurses, 87.4% used a transport service as a passenger, 27.2% stated that they maintained social distance in the vehicle, 83% nurses stated that transport service was inappropriate and about 49% nurses stated that transport service could be further improved. More than half of the nurses (55.3%) stated that service quality was poor as well as 36.9% nurses stated that service quality was fair and rest of them (7.8%) stated that service quality was good. Out of 101 patients, 66.3% stated that they had easy access to the ambulance services, 62.4% stated that they were satisfied with the waiting time, only 17.8% stated that there were supply of oxygen in the ambulance and 44.6% stated that driver took extra money from them. From the 101 patients only 9.9% stated the transport services were adequate, 56.4% patients stated the personal safety on the transport was adequate and more than half of the patients (52.5%) stated that service quality was good as well as 21.8% patient stated that service quality was fair and rest of them (25.7%) stated that service quality was poor.

**Conclusion:** Hospital transport services play an important role in transporting infectious patient and healthcare workers during lockdown and others times in COVID-19 pandemic. Focusing on the safety and quantity of negative pressure transports, the existing experience suggests more measures are required in the fight against the pandemic.

**Key Words:** Quality; Transport Services; Tertiary Public Hospital; COVID-19; Pandemic





## Satisfaction of COVID-19 Patients regarding Healthcare of a COVID Dedicated Hospital

S.H. Shimu<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Sumona Haque Shimu, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Coronavirus disease 2019 (COVID-19), caused by SARS-CoV-2, has been declared as pandemic by World Health Organization (WHO) with increasing infections. The worldwide target of management of COVID-19 is to reduce complications with available management options. The objective of this study was to assess the level of satisfaction of COVID-19 patients regarding healthcare in a COVID-19 dedicated hospital.

**Methods:** It was a descriptive cross-sectional study carried out from January to December 2020 using a semi-structured questionnaire through telephone interview. Data were collected at Mugda Medical College Hospital from respondents who recovered from COVID-19 and received health services from emergency (triage) and inpatient department (IPD). Data were analyzed using a computer program SPSS 25 version.

**Results:** Total 210 respondents were included in the study. Among them, 77% were male, 30% were aged between 31 to 40 years and 92% were Muslim. In the hospital, 47.1% said about presence of citizen charter. All (100%) respondents said there was a ticket counter but no reception in the hospital. About 63.8% respondents faced problem during ticket collection. About 55.2% said presence of ambulance, 66.2% said there was trolley/wheel chair. Around 91% said that, there was waste bin and 44.3% said staffs used PPE during waste collection. In IPD, 55.5% of the respondents said the toilet was clean, 50% said bed sheet was changed after 2 days. About 55% of the respondents said that the COVID-19 management corner was supervised. Among all the respondents, 56.2% were satisfied with doctor, 47.9% were satisfied with nurse, 44.3% with paramedics. About 69.1% of the respondents were satisfied with treatment, 39.2% with investigation, 36.1% with cleanliness and 60.3% with health service delivery of the hospital. Overall satisfaction about the hospital was 54.12%. Significant relationships were found between supervision of COVID-19 management corner and satisfaction with doctors', nurses' and paramedics' attitude, investigation, treatment, cleanliness, environment and health service delivery of the hospital.

**Conclusion:** The study findings showed that almost half of the respondents were overall satisfied with the provided health care services. But some remarkable dissatisfaction remained regarding reception facilities and house-keeping services.

**Key Words:** Satisfaction; COVID-19; Patients; Healthcare; COVID Dedicated Hospital



## Satisfaction of Dental Patients attending Out Patient Department at Tertiary Public Hospital during COVID-19 Pandemic

S. Tabassum<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Sumaiya Tabassum, Student of MPH (Hospital Management) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Corona virus disease 2019 (COVID-19) is an infectious disease which can spread through dental treatment droplets. The COVID-19 outbreak has influenced the quality of healthcare and patient satisfaction. This study aimed to assess the level of patients' satisfaction at dental outpatient department in a tertiary public hospital during the COVID-19 pandemic.

**Methods:** A descriptive type of cross-sectional study was conducted among 150 patients of outpatient department of Dhaka Dental College. Collected data were checked, edited and data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 23. Mean, SD and frequency were calculated.

**Results:** Results showed that among respondents, 66% were female and 34% were male, 26% were graduate and majority (88%) of them were Muslim. Among the participants, 60% were housewife, 40% were private service holders, 21% were students and 22% were businessman. Among the respondents, 66.9% agreed that the safety measures taken by the hospital were up to the satisfactory level. Among the patients, 81.3% agreed that there was availability of routine and emergency dental services during COVID-19 pandemic. Among the respondents 76% were satisfied with the behavior of doctors and staff. Among the participants, 70% were satisfied with the treatment procedure in emergency situations like COVID-19 in dental outpatient department of Dhaka Dental College.

**Conclusion:** It can be concluded that patients' satisfaction is mostly dependent on the availability of treatment, well-behavior of doctor and staff, social distancing status and availability of sanitizer for hand washing at the entrance. Also, public knowledge needs to be improved about the risk of virus transmission that can be related to dental treatment. The level of satisfaction was comparatively higher for dental patients in the study area. It should serve as a motivator for all dental doctors and hospitals to ensure that no dental emergencies go untreated during the pandemic.

**Key Words:** Satisfaction; Dental Patients; Out Patient Department; Tertiary Public Hospital; COVID-19; Pandemic



## Satisfaction of Doctors regarding Working Environment in Selected Tertiary Hospital in COVID-19 Pandemic

S. Sharmin<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Dr. Sifat Sharmin, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Job satisfaction is a significant pointer of how employees feel with their work. It measures the happiness of workers with their job quality of services. One of the many challenges for an organization is to satisfy its employees in order to cope up with the ever changing and developing working environment during COVID-19 pandemic. The objective of this study was to evaluate the level of satisfaction of doctors regarding working environment.

**Methods:** This was a descriptive cross-sectional study carried out among the doctors working in Dhaka Medical College and Hospital (DMCH), Sir Salimullah Medical College and Hospital (SSMCH) and Shaheed Suhrawardy Medical College and Hospital (ShSMCH). Convenient sampling technique was used to collect data of 217 respondents with the help of a semi-structured questionnaire. Out of 217, 67 (30.9%) respondents were enrolled from DMCH, 70 (32.29%) were enrolled from SSMCH and 80 (36.9%) were from ShSMCH. Minnesota Satisfaction Questionnaire (MSQ) was used to assess the job satisfaction.

**Results:** More than half of the respondents 58.1% (126) were male and 41.9% (91) were female. In this study, most of the respondents had working experience of 6-10 years. Total mean MSQ score was  $3.62 \pm 0.23$  regarding job satisfaction in different age group. Out of 217 respondents, 30.4% (66) had high satisfaction and 69.6% (151) had average satisfaction regarding physical environment. On the other hand, 93.1% (202) had high satisfaction and 6.9% (15) had average satisfaction regarding psychological environment of the workplace. Regarding getting PPE from hospital, 70.5% respondents were deprived of, while 24.9% got the advantage. Near about half of the participants were satisfied about their relationship with their colleagues. This study revealed that a significant percentage of doctors considered their salary was not at the expected margin and maximum doctors were dissatisfied about their workload and salary. On the other hand, 68.2% respondents were satisfied with job retention and found not to be worried about losing their job. Many of the respondents did not perceive their working condition as good. The result of the study showed average level of general satisfaction among doctors.

**Conclusion:** A happy and satisfied workplace in any health center can ensure better patient care as well as achieving goal of the organization.

**Key Words:** Satisfaction; Doctors; Working Environment; Tertiary Hospital; COVID-19; Pandemic



## Telemedicine Practice of Doctors working in Selected Tertiary Hospitals during COVID-19 Pandemic

N. Islam<sup>1</sup>, J. Akther<sup>2</sup>

<sup>1</sup>Dr. Nazifa Islam, Student of MPH (Hospital Management) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Jabin Akhter, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The study was conducted to assess the telemedicine practice of doctors working in selected tertiary hospitals during COVID-19 pandemic.

**Methods:** This descriptive cross-sectional study was conducted from January to December 2020, among conveniently selected 148 doctors of Dhaka Medical College, Shaheed Suhrawardy Medical College and Bangabandhu Sheikh Mujib Medical University. Data were collected by a structured questionnaire and an observational checklist.

**Results:** Among 148 respondents, 32.4% doctors belonged to the age group of 31 to 35 years and mean age was 35.62 ( $\pm 6.1$ ) years. Male respondents (55%) were higher than female. Among the respondents, 47.3% had 2-6 months of experience on telemedicine. Among them, 77% didn't have any training on telemedicine and rest of the doctors had training which was informal in nature. Among them, 76.4% used audio-video type of telemedicine and 85.1% used tele-consultation for providing telemedicine service. The study found that 60.8% doctors used telemedicine monthly. Around 25% doctors served 1 to 10 patients in each setting and 72.3% doctors reported number didn't increase during COVID-19 pandemic. Patient profile and treatment was documented on handwritten by 76.4% doctors. Among the respondents, 70.9% maintained patient privacy and 92.6% managed patient by prescribing medicine. Half of the respondents said people looked telemedicine for skin & STD problems. Perceived benefits from telemedicine mainly were- 98.6% reduced spread of COVID-19 infection, 94.6% reduced healthcare cost, 81.8% reduced patient load, 77% less time consuming and 65.5% enhanced quality of healthcare reported by respondents. Regarding barriers during telemedicine practice- 97.3% inaccurate diagnosis, 95.9% slow internet speed, 91.2% unavailability of internet connection; 75% instability of power supply, around 61% poor audio quality, video quality and image resolution and 45.9% lack of ICT knowledge were highlighted. About half of the respondents (50.7%) felt comfort during telemedicine practice. The association between the length of experience on telemedicine and frequency of telemedicine used by the health provider was statistically significant.

**Conclusion:** Telemedicine technology can have bright and promising future when it will get more attention and consideration from decision makers.

**Key Words:** Telemedicine; Practice; Doctors; Tertiary Hospitals; COVID-19; Pandemic



## Knowledge and Practices of Dental Surgeons on Infection Control during COVID-19

S. Podder<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>Dr. Swarnali Podder, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Infection control is crucial in any dental setting because in the environment of dental setting diseases can be transmitted easily. Dental surgeons are occupationally exposed to infectious materials like body substances eg. blood, oral fluids or other secretions, contaminated supplies, equipment, environmental surfaces, water or air. The aim of the study was to assess the level of knowledge and practices of dental surgeons on infection control during COVID-19.

**Methods:** This descriptive type of cross-sectional study was conducted from 1<sup>st</sup> January to 31<sup>st</sup> December 2020. A total of 195 samples were taken to see the knowledge and practice of infection control during COVID-19 and the sample were dental surgeons. The study was conducted in Dhaka city.

**Results:** Among the respondents, 72.8% were female and 27.2% were male. About 84.1% of the respondents had only bachelor degree and others had post-graduate degree. Around 69.7% respondents were working in Govt. hospitals and 21% were working in personal chamber. Among the respondents, 70.8% had good knowledge, 23.1% had average knowledge and 6.2% had poor knowledge regarding airborne infection, blood borne infection and COVID-19 infection. About 48.7% respondents discarded the protective equipment after use, 54.4% used autoclave to sterilize the instruments, 81% were vaccinated against Hepatitis B, 69.7% used special container to dispose sharp instruments. During this COVID-19 pandemic situation, 69.7% respondents took recent travel history from patients, 72.8% used personal protective equipment, 66.2% followed international guidelines and 99% cleaned and disinfected the instruments after treatment. There was statistically no significant association between socio-demographic characteristics and knowledge score of respondents.

**Conclusion:** Every dental surgeon should be concerned about the procedures of infection control. Though maximum respondents had good knowledge. But still there is need of further improvement in knowledge and practices of dental surgeons in infection control.

**Key Words:** Knowledge; Practices; Dental Surgeons; Infection Control; COVID-19





## Knowledge and Practices of Female Commercial Sex Workers regarding Prevention of COVID-19

R. Sultana<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Riazin Sultana, Student of MPH (Health Promotion and Health Education) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Prevention is the best way to manage a pandemic like COVID-19. COVID-19 has measurably affected the vulnerable population in Bangladesh. Commercial sex workers are one of the vulnerable groups of population. The prevention of COVID-19 depends on the knowledge of sex workers and their preventive practices against the disease. The objective of the study was to assess the knowledge and practices of female commercial sex workers regarding prevention of COVID-19.

**Methods:** This descriptive type of cross-sectional study was conducted among female commercial sex workers in Tangail district from January 2021 to December 2021. Three hundred and twenty six female commercial sex workers were selected as the respondents using purposive sampling technique. Data were collected from the respondents by face to face interview using a pre-tested semi structured questionnaire.

**Results:** In this study, out of 326 respondents, mean age of the respondents were 29 ( $\pm 6.6$ ) years, 42.6% (139) were divorced, most of the respondents (95.7%) (312) belonged to Islam, majority (63.5%) (207) were illiterate and 74.2% (242) were from nuclear family. About 38.3% (125) respondents' monthly income were from 5,000-10,000 BDT. Majority (94.5%) (308) had good knowledge, 4% (13) had moderate knowledge and very few (1.5%) (5) had poor knowledge regarding prevention of COVID-19. Out of 326 respondents, 34% (111) had good practice, 33.4% (109) had poor practice and 32.5% (106) had moderate practice. Knowledge level had no statistically significant association with socio-demographic variables. Practice level had statistically significant association with educational status and monthly income ( $p < 0.05$ ). Association between knowledge and practice level was not statistically significant. Practice level was not as satisfactory as knowledge level.

**Conclusion:** Respondents should focus more to improve their practices regarding prevention of COVID-19.

**Key Words:** Knowledge; Practices; Female; Commercial Sex Workers; Prevention; COVID-19



## Knowledge and Practices on Personal Protective Equipment among Nurses working in Selected Tertiary Level Hospital during COVID-19 Pandemic

M.A. Khatun<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Mst. Arzina Khatun, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Coronavirus disease (COVID-19) is an infectious disease caused by a novel coronavirus. The ability to limit the transmission of COVID-19 in the healthcare setting requires infection prevention and control measures, of which Personal Protective Equipment (PPE) is a fundamental element. The objective of the study was to assess the level of knowledge and practices on PPE among nurses during COVID-19 pandemic in tertiary level hospital.

**Methods:** This cross-sectional study was conducted among 185 nurses working in M Abdur Rahim Medical College Hospital, Dinajpur from 1<sup>st</sup> January to 31<sup>st</sup> December 2020. Purposive sampling was adopted and a semi-structured questionnaire was used to collect data from the respondents.

**Results:** The mean age of nurses was 30.6 ( $\pm 5.53$ ) years, where 167 (90.3%) were female. Most of the nurses 179 (96.8%) had no training on PPE use. In the hospital, 149 (80.5%) nurses always had easy access of PPE while 36 (19.5%) sometimes had easy access of PPE. Most of the nurses (95.7% to 100%) knew that medical mask, gloves, eye protector, covered shoes and fluid resistant shoe covers or boots should be used while providing direct care to COVID-19 patient. Among the nurses, 113 (61.1%) did not know the correct sequences of putting on PPE and 66 (35.7%) did not know the correct sequences of putting off PPE. Out of 185 nurses, 67 (36.2%) did not know that they should maintain hand hygiene after taking off PPE. Forty three (23.2%) respondents did not know about the proper disposal of PPE after use. The study found that 113 (61.1%) nurses had good knowledge on PPE while 72 (38.9%) had poor knowledge on PPE. Among the nurses, 146 (78.9%) wore gown properly, 134 (72.4%) wore mask properly and 174 (94.1%) wore gloves properly. However, 106 (57.3%) nurses wore surgical cap or hood properly, 111 (60%) wore shoe cover properly. Out of 185 nurses, 56.6% had good practice on PPE and 45.4% had poor practice on PPE. Level of knowledge was significantly associated with availability of PPE ( $p=0.004$ ) and working department ( $p<0.001$ ). Level of practice was significantly associated with work experience ( $p=0.008$ ), availability of PPE ( $p<0.001$ ), working department ( $p<0.001$ ) and level of knowledge ( $p<0.001$ ).

**Conclusion:** The nurses caring for patients with COVID-19 had good level of knowledge and practices on PPE. Training sessions regarding the use of PPE, along with adequate supply of PPE should be implemented to ensure maintenance of appropriate practices during the COVID-19 pandemic.

**Key Words:** Knowledge; Practices; Personal Protective Equipment; Nurses; Tertiary Level Hospital, COVID-19; Pandemic



## Knowledge of Field Level Health Care Workers regarding COVID-19 in Selected Upazila Health Complexes

M.R. Parvin<sup>1</sup>, R. Choudhury<sup>2</sup>

<sup>1</sup>Mst. Rozina Parvin, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Rafaat Choudhury, Supervisor and Assistant Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic and its rapid rise in incidence has been a major concern internationally. This study was conducted to understand the knowledge regarding COVID-19 among field level healthcare workers and to assess the level of knowledge regarding COVID-19 among field level healthcare workers.

**Methods:** A cross-sectional study was conducted from January 2020 to December 2020 to assess the knowledge of field level healthcare workers regarding COVID-19 in selected Upazila Health Complexes. One hundred and sixty two (162) field level healthcare workers were selected based on defined selection criteria and the study was conducted at Union Sub-centres, Community Clinics and Upazila Health Complexes of Ulipur, Rajarhat and Chilmari Upazila. A convenient sampling method was carried out and the data were collected through a pre-tested semi structured questionnaire by face to face interview maintaining confidentiality and privacy. Data were analyzed by SPSS.

**Results:** This study showed that among the respondents, 59.9% were female and 40.1% were male. The mean age of the participants was 39.45 years. Among the healthcare workers 7.4% were Family Welfare Visitor, 27.2% were Family Welfare Assistant, 6.2% were Family Planning Inspector, 23.5% were Health Assistant, 8% were Health Inspector and 27.8% were Community Health Care Provider. Among the respondents, 138 (85.2%) had good knowledge and 24 (14.8%) had poor knowledge regarding COVID-19. Out of 162 field level health care workers, 55.6% participants had good knowledge and 44.4% participants had poor knowledge regarding transmission & clinical symptoms of COVID-19. Regarding knowledge level on diagnosis & treatment of COVID-19, 36.4% participants had good knowledge and 63.6% had poor knowledge. This study showed that regarding prevention of COVID-19, 95.7% participants had good knowledge and 4.3% had poor knowledge. Chi-square test and Fisher's Exact test was used as test of significance and  $p < 0.05$  was considered to be significant. There was no significant association between knowledge and certain socio-demographic variables (age, sex, education, working experience). Association between Job category and knowledge level was found to be statistically significant ( $p = 0.01$ ).

**Conclusion:** Majority of healthcare workers had good knowledge toward COVID-19. Although additional education interventions and campaigns are required for field level healthcare workers to cope with current pandemic situation.

**Key Words:** Knowledge; Field Level; Health Care Workers; COVID-19; Upazila Health Complexes



## Knowledge of Undergraduate Students regarding Quarantine and Isolation for COVID-19

T. Islam<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Tangila Islam, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Coronavirus disease 2019 (COVID-19) is a fatal and highly infectious disease that has caused a global pandemic and public health concern. The World Health Organization (WHO) declared that COVID-19 is a public health emergency of international concern on 30th January and a pandemic on 11th March 2020. This global pandemic has become a great threat to everyone specially the study and life of undergraduate students in Bangladesh. The study aimed to assess the level of knowledge regarding quarantine and isolation for COVID-19.

**Methods:** This cross-sectional study was conducted among 194 undergraduate students of 4 private universities of Bangladesh from January to December 2020. Respondents were selected on the basis of inclusion and exclusion criteria and sample was taken by convenient sampling technique. Data were collected by a pre tested semi-structured questionnaire.

**Results:** Among the undergraduate students, the age limit was within 19-29 years and mean age was  $22.2 \pm 1.9$  years, 86% were male, 75.3% were from urban area, 37.1% had monthly family income within 30001-50000 taka. The knowledge regarding quarantine was poor (12.9%), average (79.4%) and good (7.7%). The knowledge regarding isolation was poor (47.4%), average (51.0%) and good (1.5%). The level of knowledge regarding quarantine and isolation was significantly associated with study year of undergraduate students ( $p < 0.05$ ). The level of knowledge regarding quarantine was significantly associated with the level of knowledge regarding isolation ( $p < 0.05$ ).

**Conclusion:** This study showed that the knowledge level regarding quarantine and isolation was poor. However, this may lead to poor public health practices in the community. So therefore, improved community activities, educational campaigns and effective communication are needed to reduce the spread of disease where prevention is better than cure.

**Key Words:** Knowledge; Undergraduate Students; Quarantine; Isolation; COVID-19



## Lifestyle of College Students during COVID-19 Pandemic

A.R. Mondol<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>Ali Reza Mondol, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** On December 12<sup>th</sup>, 2019, a new coronavirus (SARS-Cov2) emerged in Wuhan, China, sparking a pandemic of acute respiratory syndrome in humans (COVID-19). The COVID-19 pandemic represents a massive impact on human health, causing sudden lifestyle changes through social distancing and isolation at home, with social and economic consequences. The aim of the study was to assess the lifestyle of college students during COVID-19 pandemic. Lifestyle of college students includes dietary habits, physical activity, sleep pattern and risk behavior of respondents.

**Methods:** It was a descriptive cross-sectional study on students (1st to 4th year Honors) from Gaibandha Government University College in Gaibandha district. Sampling was done by convenient sampling technique. A semi-structured questionnaire was administered to college students to obtain information on socio-demographic characteristics, dietary habits, physical activity, sleep pattern and risk behavior during COVID-19 pandemic. Data were collected by face to face interview. Associations of categorical variables were assessed using Chi square test and Fisher's Exact test.

**Results:** A total of 200 respondents were included in the study, aged between 17-30 years, 39.5% had monthly family income <20000 Taka. During the quarantine period, 64.4% male college students changed their eating habits, 76.2% nuclear/single family consumed more healthy food than before quarantine ( $p < 0.016$ ), 57.7% male and 56.2% female sometimes had an unhealthy diet/food, 3.5% respondents didn't consume fruits and vegetables, mean hours of sitting time of the male respondents was 10.86 hours, mean days of walk for at least 10 minutes of the male respondents was 4.54 days and female was 4.49 days, usual bed time of 26.9% male was midnight to 02:00 am, 10.4% female respondents took medicine that help to sleep ( $p < 0.031$ ), 17% respondents smoked tobacco products, 20.5% respondents had experience of consuming alcohol such as beer, wine, spirits.

**Conclusion:** Isolation is a necessary measure to protect public health. But results indicated that it altered dietary habits, physical activity and sleep pattern in a health compromising direction.

**Key Words:** Lifestyle; College Students; COVID-19; Pandemic





## Mental Stress and its Associating Factors among Intern Doctors during COVID-19 Pandemic

J. Baki<sup>1</sup>, M.R. Alam<sup>2</sup>

<sup>1</sup>Dr. Jannatul Baki, Student of MPH (Health Promotion and Health Education) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Rashidul Alam, Supervisor and Associate Professor (Community Medicine), Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Mental stress is a state of emotional suffering associated with stressors and demands that are difficult to cope up with in daily life. The world is going through a pandemic since November 2019 and the first COVID-19 case was detected in Bangladesh on 8<sup>th</sup> March 2020. As doctors are working as front liners in treating COVID, they are at great risk of being mentally stressed. Several factors are working to cause mental stress, such as fear of getting infected by COVID-19 disease, fear of spreading infection to family members, chronic disease, affected family members and close one affected with COVID-19 pandemic. Aim of the study was to assess the level of mental stress and its associated factors among intern doctors during COVID-19.

**Methods:** A cross-sectional study was conducted among 333 intern doctors in Cumilla Medical College and Hospital, Central Medical College and Hospital, Eastern Medical College and Hospital and Moynamoti Medical College and Hospital. The study period was 1<sup>st</sup> January to 31<sup>st</sup> December 2021. Sample was taken by purposive sampling technique. Data were collected by a pre-tested structured questionnaire to assess the level of mental stress using Perceived Stress Scale (PSS) Bengali version.

**Results:** The study revealed that among 333 respondents, according to the perceived stress component of the study, 74.8% respondents had moderate stress, 15% had low stress and 10.2% had high stress. More than half (55.3%) respondents were 25 or less than 25 years old and mean age was 25.34 years. Among 333 respondents, majority were unmarried, more than 80% respondents were from nuclear family. Statistically significant associations were found between mental stress and socio demographic variable of the respondents (sex and marital status), workloads and death of family member of the intern doctors.

**Conclusion:** Appropriate measures should be taken to reduce workload of intern doctors by equal distribution of duty and motivation from senior doctors.

**Key Words:** Mental stress; Factors; Intern Doctors; COVID-19; Pandemic



## Mental Stress of Doctors working at Selected District Sadar Hospitals of Bangladesh during COVID-19 Pandemic

R.I. Promy<sup>1</sup>, M.R. Alam<sup>2</sup>

<sup>1</sup>Dr. Riman Islam Promy, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Rashidul Alam, Supervisor and Associate Professor (Community Medicine), Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Mental stress is a state of emotional suffering associated with stressors and demands that are difficult to cope with in daily life. The world is going through a pandemic since November 2019 and the doctors are working as front liners in treating COVID-19, they are at great risk of being mentally stressed. The aim of the study was to assess the level of mental stress of doctors in selected district sadar hospitals of Bangladesh during COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted among 122 doctors in Narayanganj, Munshiganj and Comilla district sadar hospitals from 1<sup>st</sup> January to 31<sup>st</sup> December 2020. The sample was selected by purposive sampling technique. Data were collected through face-to-face interview using a pre-tested semi-structured questionnaire incorporated with Perceived Stress Scale (PSS) to assess the level of mental stress among the doctors working in those hospitals.

**Results:** Among 122 respondents, 51.64% were male and 48.36% were female. Majority (45.9%) were between 35 to 44 years of age with median of 39 years. Among them 87.7% were married. 57.4% were medical graduate and rest were postgraduate, 65.57% belonged to nuclear family, 50.8% had monthly family income between 50001-100000 taka. Among the respondents, 53.3% had less than 13 years of experience as a doctor. 38.5% had comorbidities, 59% were infected by COVID-19, 59% had relatives' COVID infection. High stress level was more common among the doctors aged more than 54 years (55.56%) and RMOs (33.33%). Doctors having experience more than 13 years had high level of stress (29.2%). Those who were infected by COVID-19 had high stress (29.17%). High stress was more (38.3%) in doctors having comorbidity. Doctors who dealt with COVID-19 infected patients directly had high stress more (26.23%). Doctors having fear of spreading infection to family members had high level of stress (24%) than doctors having no fear (2%). Statistically significant associations were found between stress level and age group, COVID infection, comorbidity, availability of PPE and family members infected with COVID infection ( $p < 0.05$ ).

**Conclusion:** Mental health of doctors is important to improve their skill and to provide better service to patients. Reduced Mental Stress of doctors enhances better efficiency in their professional field.

**Key Words:** Mental stress; Doctors; District Sadar Hospitals; Bangladesh; COVID-19; Pandemic



## **Mental Stress of Nurses involved in Treatment of COVID-19 Patients in a Selected Tertiary Level Hospital**

M.M. Begum<sup>1</sup>, M.R. Alam<sup>2</sup>

<sup>1</sup>Mst. Monowara Begum, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Rashidul Alam, Supervisor and Associate Professor (Community Medicine), Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### **ABSTRACT**

**Background:** The coronavirus disease 2019 (COVID-19) outbreak is a worldwide emergency, as its rapid spread and high mortality rate has caused severe disruptions of normal life. Health care professionals, particularly nurses, are on the front line of dealing with this aggressive and rapid-spreading virus. They are considered as a vulnerable group to experience mental stress amid the COVID-19 pandemic. The objective of the study was to assess mental stress of nurses involved in treatment of COVID-19 patients in a selected tertiary level hospital.

**Methods:** This cross-sectional study was conducted among 184 nurses working in M Abdur Rahim Medical College Hospital, Dinajpur from 1<sup>st</sup> January to 31<sup>st</sup> December 2020. Purposive sampling technique was adopted and a pre-tested semi-structured questionnaire incorporated with Perceived Stress Scale (PSS) was used to collect data from the respondents. The Bangla translated version of Perceived Stress Scale was used in this study.

**Results:** The mean age of participants was 30.59±4.95 years where 51.1% (n=94) of the nurses were from 26-30 years of age group and 87.5% (n=161) were female. Among the nurses, 76.1% (n=140) were married and 66.8% (n=123) had passed Diploma in nursing. Most of the respondents (98.4%, n=181) had no training on COVID-19. The mean working period was 3.46±2.46 months which ranged from 1 to 9 months. Majority of the respondents (76.6%, n=141) had worked in COVID-19 unit for ≤ 56 hours per week and 23.4% (n=43) had worked for >56 hours per week. Majority of the respondents (78.3%, n=144) had moderate level of perceived stress and 19% (n=35) had low level of perceived stress. No significant statistical association was found regarding level of stress and age (p=0.409), educational status (p=0.512), monthly family income (p=0.07), working period in COVID-19 unit (p=0.306), working days per month (p=0.222) and working hours per week of the respondents (p=1.000). Significant statistical association was found regarding level of stress and gender of the respondents (p=0.046). Marginally significant statistical association was found regarding level of stress and marital status of the respondents (p=0.05).

**Conclusion:** Majority of the nurses caring for patients with COVID-19 had moderate stress level. Nurses who were female and married had greater mental stress than others. Special interventions to promote mental well-being in nurses exposed to COVID-19 are needed to be immediately implemented where women and married nurses requiring particular attention.

**Key Words:** Mental stress; Nurses; Treatment; COVID-19; Patients; Tertiary Level Hospital



## Perceived Mental Stress of Employed and Unemployed Women during COVID-19 Pandemic

N. Banu<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>Dr. Nelufar Banu, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 has entered into our lives at the end of 2019 and whole world still now is in threat. It is a public health emergency of international concern. Hence this study was designed to compare the perceived mental stress level of employed and unemployed women with a view to provide information regarding perceived mental stress during COVID-19 pandemic.

**Methods:** This comparative cross-sectional study was conducted between 120 employed women (Bankers, Teachers and other sectors employees) and 120 unemployed women (Housewives). Sample size was 240. The sampling technique was purposive type of non-probability sampling. A semi-structured questionnaire was developed, which was incorporated with Perceived Stress Scale. Data were collected by face to face interview.

**Results:** In this comparative study, as perceived mental stress of employed and unemployed women were compared according to PSS Scale, 98 (81.7%) women of employed group and 97 (80.8%) women of unemployed group suffered from moderate stress, 12 (10%) women in employed group and 10 (8.3%) women in unemployed group suffered from low stress and 10 (8.3%) women in employed group and 13 (10.8%) women in unemployed group suffered from high perceived stress. Mean ( $\pm$ SD) of perceived mental stress between employed and unemployed women were 20 ( $\pm$ 5.48) and 20.5 ( $\pm$ 5.16) respectively, which was not statistically significant ( $p > 0.05$ ). There were statistically significant associations between perceived mental stress and socio demographic characteristics i.e. educational qualification ( $p = 0.04$ ), monthly family income ( $p = 0.03$ ) and other factors like, knowledge about having specific treatment of COVID-19 ( $p = 0.02$ ), complete recovery from COVID-19 ( $P = 0.02$ ), gratified with conjugal life ( $p = 0.018$  and  $p = 0.006$ ), pleased with family members ( $p = 0.05$  and  $p = 0.001$ ) of employed and unemployed women respectively. Mean ( $\pm$ SD) age of employed and unemployed women were 37.18 ( $\pm$ 8.2) years and 35.46 ( $\pm$ 8.9) years respectively.

**Conclusion:** The study revealed employed and unemployed women had no significant difference in perceived mental stress but had some associated factors leading them to stressful situation during COVID-19 pandemic. So equal emphasis should be given to prevent perceived mental stress on both employed and unemployed women.

**Key Words:** Perceived Mental Stress; Employed; Unemployed; Women; COVID-19; Pandemic



## Perception of Dental Patients regarding COVID-19

T. Ahsan<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Towhida Ahsan, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 has emerged as a major public health problem in the world which is caused by SARS CoV-2. In this situation dental patients are very vulnerable because maximum dental procedures produce big amounts of blood & salivary droplets. Most of the dental settings have closed space and dental treatments require very close contact between dental health care providers & patients during treatment. The aim of the study was to assess the perception of dental patients regarding COVID-19.

**Methods:** Data were collected from total 342 respondents by face to face interview and systematic random sampling was done. The questionnaire was semi structured which contained seven parts for assessing COVID-19 related perception. The analysis was done by using IBM SPSS-20 and was presented by frequencies, percentages, charts & diagrams.

**Results:** In this study, majority of the respondents (85.1%) had more accurate health literacy related perception regarding COVID-19 and there was significant association ( $p < 0.05$ ) between the respondents' educational status and their health literacy status regarding COVID-19. Most of the dental patients (67.8%) had low risk perception regarding COVID-19. There were significant associations ( $p < 0.05$ ) between the respondents' risk perception regarding COVID-19 and educational status and occupation. About 69% dental patients were worried during visiting dental facility. Dental hospital environment related perception of the patients was good (98.5%). About 83.3% patients had good preventive behavior related perception. Most of the respondents trusted TV and least of them (17%) trusted social media but for COVID-19 related information maximum patients used social media (42.4%), least of them used hotlines (2.9%) and government website (4.7%).

**Conclusion:** In our country we have a great portion of dental patients. If we know their overall perception regarding COVID-19 it will be easier to make them informed and aware about it and it will be beneficial to reduce the burden of our health sector also.

**Key Words:** Perception; Dental Patients; COVID-19





## Post-Traumatic Stress of Quarantined Population for COVID-19 Pandemic

D.I.A. Sakir<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Dewan Ibna Al Sakir, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** It had been fifteen months since the first confirmed case (March 2020) of COVID-19 in Bangladesh and people have now got a more complete picture of the extent of the pandemic. Therefore, it is time to evaluate the effects of COVID-19 on mental health. The current study aimed to assess the level of post-traumatic stress disorder (PTSD) of the quarantined population in Bangladesh during COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted among 222 respondents. Sample was collected from Kuwait-Bangladesh Friendship Government Hospital and Dhaka Medical College and Hospital. The study period was from 1<sup>st</sup> January to 31<sup>st</sup> December 2020. Respondents were selected on the basis of inclusion and exclusion criteria and sample was taken by purposive sampling technique. A semi-structured pre-tested questionnaire was used to obtain socio-demographic data and PTSD Checklist-Civilian Version (PCL-C) scale was used to assess the level of post-traumatic stress of quarantined population for COVID-19 pandemic through face to face interview. Ethical clearance was obtained from Institutional Review Board of NIPSOM prior to collection of data.

**Results:** Among 222 respondents, 62% were female, 38% were male. About half (49.5%) of the respondents were in age group 25 to 34 years, mean age was 32.18±9.1 years. Among them 43.7% were graduates (MBBS and others), 32.4% were doctors, 69.8% were married, 83.3% belonged to nuclear family, 67.6% of the respondents lived in a family of less than five members and 41.4% had monthly family income less than 50,000 Taka. Among the respondents, 27% had little to no severity of PTSD, followed by 13.5% had some PTSD, 40.5% had moderate to moderately high severity of PTSD and 18.9% had high severity of PTSD. Statistically significant associations were found between the level of post-traumatic stress disorder (PTSD) and occupation, physical exercise and sleep pattern ((p<0.05).

**Conclusion:** This study showed, among the respondents most were suffering from moderate to moderately severe post-traumatic stress disorder (PTSD). There is a vast opportunity to improve the mental health care system as an integral part of comprehensive primary health care.

**Key Words:** Post-Traumatic Stress; Quarantined Population; COVID-19; Pandemic



## **Role of Mass Media on Raising Awareness regarding COVID-19 in Urban Adults**

M.A. Adnan<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>*Dr. Md. Asif Adnan, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.*

<sup>2</sup>*Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.*

### **ABSTRACT**

**Background:** Mass media can play an important role to raise awareness among people regarding COVID-19 pandemic. The objective of the study was to assess the role of mass media on raising awareness regarding COVID-19.

**Methods:** This was a cross-sectional study among adults of Dhaka city. Data were collected by a pre-tested semi-structured questionnaire. Face to face interview was done to collect data from the participants. The findings of the study were presented by frequency, percentage in tables and graphs with means and standard deviations for continuous variables and frequency distributions for categorical variables. Associations of categorical variables were assessed using Chi-square test and Fisher's Exact test.

**Results:** Total number of respondents was 384. Mean age of respondents was 30.92±10.5 years. Most of the respondents were male (59.4%), married (56.3%) and had education of graduate level (58.9%). Mean monthly family income of the respondents was 66375±52976 taka. Most of the respondents used YouTube (93.5%) followed by Facebook (91.7%). Use of mass media was increased by most of the respondents (72.1%) after the COVID-19 pandemic than before. Majority of the respondents first heard about COVID-19 in mass media (92.4%). Mass media was used most by the respondents (92.4%) for information about COVID-19, among which, social media respondents (54.6%) was used by most for information about COVID-19. Among the respondents from graduate educational qualification, 93.8% used mass media as a source of information ( $p<0.5$ ). Prevention related information was sought most (95.2%) by the respondents from mass media. Mass media was fully effective (73.4%) to raise awareness of most of the respondents regarding COVID-19. Among the respondents who were from joint family, mass media was fully effective for 78.2% respondents to raise awareness regarding COVID-19 ( $p<0.05$ ). Among the respondents with number of family members from 6-15, mass media was fully effective for 85% respondents to raise awareness regarding COVID-19 ( $p<0.05$ ).

**Conclusion:** The findings of the study showed mass media played an important role to raise awareness about COVID-19 pandemic among urban adults.

**Key Words:** Role; Mass Media; Awareness; COVID-19; Urban; Adults



## Self-Preventive Medication Practice for COVID-19 in Urban Adults

F.F. Ahmed<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>Dr. Fabliha Fyrose Ahmed, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The global COVID-19 pandemic has promoted an urgent search for integrative strategies to prevent infection. The objective of the study was to identify the self-medication practices for COVID-19 prevention.

**Methods:** It was a cross-sectional study on urban adults who had taken self-medication at home for prevention of COVID-19. Sampling was done by purposive sampling method. A pretested semi-structured questionnaire was administered by face to face interview and online platform for data collection. Three (3) point modified Likert scale was used to categorize the levels of preventive self-medication practice. The findings of the study were presented by frequency, percentage in tables and graphs with means and standard deviations (SD). Associations of categorical variables were assessed using Chi square test ( $\chi^2$ ) and Fisher's Exact test.

**Results:** Total number of respondents were 202 urban dwellers with a mean age of  $35.22 \pm 14.3$  years. Majority of the respondents practiced preventive self-medication without consulting a physician (66.8%) and shared the advice with their peers sometimes (27.2%). Different health personnel (37.6%) and social media (33.7%) played an important role as source for information. Exposure to risky environment (57.4%) was the most frequent reason for practicing preventive self-medication. By performing association tests, it was seen that the urban population (41, 27.5%,  $p < 0.001$ ) who were between 59-68 years (11, 64.7%,  $p < 0.001$ ) and got their information from combined sources (5, 50%,  $p < 0.032$ ) practiced preventive home preparations frequently. The urban population who were married (2, 1.6%,  $p < 0.037$ ), had 2-4 children (2, 11.8%,  $p < 0.04$ ) and got information from health personnel (2, 2.6%,  $p < 0.032$ ) practiced preventive medications very frequently. Preventive medication practices were low in 97 (48%) respondents and preventive home preparations were moderately practiced by 81 (40.1%) respondents. Among preventive medication users, Vitamin C and Zinc were frequently used (Fisher's Exact test=70.7, 76.6;  $p < 0.000$ ,  $p < 0.000$ ). Among home remedy users, kalijira and ginger were frequently used (Fisher's Exact test=70.7, 76.1;  $p < 0.000$ ,  $p < 0.000$ ).

**Conclusion:** Preventive self-medication was introduced during this current pandemic. This preventive self-medicated behavior was not observed in the past several pandemics.

**Key Words:** Self-Preventive Medication; Practice; COVID-19; Urban; Adults



## Sleep Pattern of Undergraduate Medical Students during COVID-19 Pandemic

S. Mostarin<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Somaya Mostarin, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assistant Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Any person in the world needs time of rest to improve and enhance his or her capacity to function. Maintaining a regular sleep pattern helps to preserve the timing of the body's internal clock and can aid in having a healthy lifestyle. Medical students are a general population subgroup that is more vulnerable to poor sleep quality. This study aimed to find out the sleep pattern of undergraduate medical students during the COVID-19 pandemic.

**Methods:** A descriptive cross-sectional study was conducted among 264 medical students by using a pre-tested semi structured questionnaire and Pittsburgh Sleep Quality Index (PSQI) during COVID-19 pandemic, when medical colleges were closed.

**Results:** Medical students spent up to 9 hours in digital media and mean was 5.1( $\pm$ 2.7) hours per day. Maximum students had gone to bed within 10.01 PM to 12:00 AM but woke up later while 40.2% of students had severe sleep latency and 32.3% students missed their breakfast due to sleep. Mean sleep duration at night was 6.5 ( $\pm$ 1.3) hours but 64.4% of medical students had poor sleep quality. Among the students, 18.9% had very low habitual sleep efficiency, 28.4% took daytime nap  $\geq$  60 minutes regularly, 68.9% faced daytime dysfunction. Statistically significant associations were found between sleep quality and BMI, physical exercise, smoking, tea/coffee consumption, taking drugs for stress/recreation and wake-up time ( $p < 0.05$ ).

**Conclusion:** These results demonstrated insufficient sleep and unsatisfactory sleep-wake pattern. To improve the sleep quality, we should raise awareness among them by establishing counseling facilities and promoting healthy sleeping habit and normal sleep pattern.

**Key Words:** Sleep Pattern; Undergraduate Medical Students; COVID-19; Pandemic



## Tele Dentistry Practices among the Dental Surgeons during COVID-19 Pandemic

S. Hossain<sup>1</sup>, M.G. Abbas<sup>2</sup>

<sup>1</sup>Dr. Showlin Hossain, Student of MPH (Health Promotion and Health Education) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md Golam Abbas, PhD, Supervisor and Assisat Professor, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Currently, the use of teledentistry is still low in developing countries. In Bangladesh, the state of teledentistry is undocumented. Without knowledge and positive attitude of dental practitioners towards teledentistry, it will not be easy to implement teledentistry innovations. There are many challenges for acceptance of this technology by the dentists as well as patients, which need to be addressed urgently. This study aimed to assess teledentistry practices among the dental surgeons during COVID-19 pandemic.

**Methods:** A descriptive cross-sectional study was conducted among 218 dental surgeons of 6 dental colleges and hospitals in Dhaka city by using a pre-tested semi structured questionnaire.

**Results:** Among 218 respondents, 66.5% dental surgeons belonged to the age group of 24 to 33 years and the mean age was  $31.7 \pm 7.4$  years. Female were 61.5% which was higher than male (38.5%). Among them, 85.2% respondents said the number of teledentistry practice increased during COVID-19 pandemic and 89.9% respondents said teledentistry could reduce spread of infection. The majority of the respondents agreed with giving oral health education (81.2%) and efficient patient referral (67.4%). Among the respondents, 60.1% used audio type of teledentistry service and 41.7% dental surgeons managed patients by counselling. Most of the respondents (53.7%) used teledentistry service weekly, frequency of daily use was very poor which was only 11%. About 84.9% respondents expressed that acute pain was the most common complaint by patients followed by sensitivity (82.1%). A substantial proportion of respondents (70-75%) expressed that there were some barriers to practice teledentistry such as poor audio video quality, accurate diagnosis provision and difficulty to use software. By doing test of significance to assess the association between types of the respondents and collection of information showed statistically significant association ( $p=0.000$ ).

**Conclusion:** This results demonstrated that teledentistry practices increased during COVID-19 pandemic and it could reduce spread of infection. However, this study identified certain barriers to teledentistry practice such as poor audio video quality and difficulties in accurate diagnosis provision. The study was able to assess teledentistry practice by dental surgeons during COVID-19 pandemic.

**Key Words:** Tele Dentistry; Practices; Dental Surgeons; COVID-19; Pandemic





## Workplace Barriers Experienced by Nurses in a Tertiary Level Hospital during COVID-19 Pandemic

M. Akter<sup>1</sup>, H. Sultana<sup>2</sup>

<sup>1</sup>Mina Akter, Student of MPH (Health Promotion and Health Education) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Hafiza Sultana, Supervisor and Head, Department of Health Education, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Nurses are the frontline workers providing medical care and at the highest risk of getting COVID-19. They are experiencing barriers while discharging their duties. So, identifying workplace barriers experienced by nurses during COVID-19 pandemic is important because they are the most vital component of medical care. The purpose of the study was to identify the workplace barriers experienced by nurses in a tertiary level hospital during COVID-19 pandemic.

**Methods:** It was a descriptive type of cross-sectional study on workplace barriers experienced by nurses in a COVID-19 dedicated hospital. The study was conducted among 200 nurses in Dhaka Medical College Hospital. Sampling was done by convenient sampling method. A semi-structured questionnaire was administered to the respondents to obtain information on organizational barriers, service-related barriers, nurse related barriers, patient related barriers, caregiver related barriers and socio-demographic characteristics of the respondents during COVID-19 pandemic. Data were collected by face-to-face interview.

**Results:** The finding revealed that among the respondents, 83% were female, mean age was  $31.8 \pm 5.5$  years, 52.5% of them had diploma in nursing, 61.5% of their working experience was 1-5 years and 53% of them were working in the inpatient department. The study identified the major barriers as lack of guideline- 82.5%, increased occupational hazard- 81.5%, discomfort while wearing PPE- 79%, non-co-operative caregiver- 77%, shortage of PPE- 74.5%, inadequate social distancing- 74%, overcrowding- 73%, non-co-operative patient- 70%, inadequate training coverage- 67%, lack of doffing & donning area- 56.5%, poor communication with physician- 53% and insufficient knowledge- 52.5%. Significant associations were found between different department and shortage of PPE ( $p < 0.000$ ), different department and poor communication with physician ( $p < 0.000$ ), different department of hospital and overcrowding in workplace ( $p < 0.000$ ) and gender and discomfort of PPE ( $p < 0.038$ ).

**Conclusion:** The barriers those were identified should be overcome to improve nurses' experiences and in turn the quality of patient care during COVID-19 pandemic. Availability of PPE, adequate training, guideline and social distancing should be ensured.

**Key Words:** Workplace; Barriers; Nurses; Tertiary Level Hospital; COVID-19; Pandemic



## Accessibility to Upazila Health Complex Services during COVID-19 Pandemic

M.B. Hossain<sup>1</sup>, M.K. Amin<sup>2</sup>

<sup>1</sup>Dr. Md. Belaet Hossain, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Muhammad Kamrul Amin, Supervisor and Associate Professor, Department of Community Medicine, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The health sector has been one of the most badly affected sectors during the ongoing COVID-19 pandemic. The accessibility to UHC services is crucial for rural people to meet their basic healthcare needs. But there is scarcity of relevant data regarding accessibility to UHC services. The aim of this study was to assess the level of accessibility to upazila health complex services during the COVID-19 pandemic.

**Methods:** The study was a descriptive cross-sectional study, which was conducted at Sreenagar UHC of Munshigonj district in Bangladesh. The duration of the study was one year from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. The study included 402 conveniently selected rural adults. After taking informed written consent, data were collected for 26 days by face-to-face interview with the help of a semi-structured questionnaire. Accessibility was measured by a set of ten questions. Privacy and confidentiality were maintained strictly.

**Results:** The study revealed that among the respondents, most (71.9%) thought that physical distance was not maintained in the UHC while seeking services. Almost 80% of the respondents got full course of prescribed drugs and the majority (75.4%) got access to advised laboratory facilities. Most of the respondents (67.4%) resided near the UHC and 92.8% found available transport while coming to UHC. More than three-fourth (76.6%) of the respondents were vaccinated against COVID-19. Accessibility to UHC services was found good among 60.2% respondents followed by average which was found among 38.8%. It was found that accessibility to UHC services was better in males than females. The majority of respondents with Masters level of education (80%) had good accessibility while 48.1% of illiterate people had average accessibility, which was found statistically significant ( $p < 0.05$ ). Most of the students (77.1%) and businessmen (62.5%) had good accessibility to UHC whereas average accessibility was found among 50% of day laborers and 47.8% of farmers. Most of the respondents (84.6%) who had to wait for a short time to get the service had good accessibility while more than half (54.6%) had average accessibility who had to wait long, which was found statistically significant ( $p < 0.05$ ). Almost three-fourth (74.5%) had good accessibility who had a short distance of residence from UHC and it was found statistically significant ( $p < 0.05$ ).

**Conclusion:** This study involving one UHC revealed that around two-fifth of the service seekers did not have good accessibility. This issue of accessibility should be further studied involving more numbers of health care centers.

**Key Words:** Accessibility; Upazila Health Complex; Services; COVID-19; Pandemic



## **Adaptation of Personal Protective Measures in Public Places during COVID-19 Pandemic**

M. Ferdous<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>*Dr. Mobina Ferdous, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.*

<sup>2</sup>*Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.*

### **ABSTRACT**

**Background:** COVID-19 pandemic is a global issue and every nation is trying to sort out the best solution to stop its transmission. Adaptation of WHO recommended five personal preventive measures is must and mandatory to get rid of death paws of COVID-19 pandemic. The study aimed to ascertain the status of personal protective measures in public places during COVID-19 pandemic.

**Methods:** This cross-sectional study was conducted from 1<sup>st</sup> January 2020 to 31<sup>st</sup> December 2020. Data were collected through face to face interview using a pretested semi-structured questionnaire from conveniently selected 152 people in public places at Sherpur Sadar, Sherpur district under Mymensingh division of Bangladesh. Collected data were checked, processed, coded and analyzed by SPSS.

**Results:** Among 152 respondents, 44 were found in 41-50 years of age group and only 2.1% respondents were more than 71 years old. Among all, 32.9% respondents had only primary educational qualification, 56.6% respondents were service holder, 95.3% respondents belonged to Islam religion, 88.8% respondents were married, 53.3% respondents had semi concrete house, 86.8% respondents had one toilet, 86.2% had one bathroom at their house, 98.7% heard about COVID-19. By recalled questionnaire about the types of personal protective measures, 92.1% respondents said frequency of hand washing had increased, 82.1% wore mask always and 65.1% respondents mentioned avoidance of touching eyes, nose and mouth. Among the respondents, 95.4% said they never went outside without any reason. According to self-perception, only 19.1% of respondents could always maintain WHO recommended five personal protective measures but 96.1% of them thought about the need of maintaining personal protective measures strictly. All the respondents (100%) were facing obstacles in maintenance because all of them had to go outside for necessities and could not maintain social distancing in public places. Among them, 34.9% had good adaptation to personal protective measures and 65.1% had bad adaptation. Bad adaptation was significantly higher ( $p < 0.05$ ) in lower level educated respondents. Bad adaptation was also significantly higher ( $p < 0.05$ ) in male than female. Bad adaptation was maximum (88.8%) in married person but it was not statistically significant ( $p > 0.05$ ).

**Conclusion:** On the basis of current study, personal protective measures were badly adapted in public places. So, a higher percent of good adaptation of personal protective measures for slowing down the spread of COVID-19 is needed in public places.

**Key Words:** Adaptation; Personal Protective Measures; Public Places; COVID-19; Pandemic



## Challenges of Nurses in Management of COVID-19 Patients in Tertiary Hospital

M.S. Reza<sup>1</sup>, N.A. Jahan<sup>2</sup>

<sup>1</sup>Md. Shaheen Reza, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212.

<sup>2</sup>Dr. Naznin Akter Jahan, Supervisor and Assistant Professor (Biochemistry), Department of Nutrition and Biochemistry, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 pandemic is a unique and unprecedented scenario for many healthcare workers especially for the frontline fighters like nurses. The nurses are facing significant challenges to take care of COVID-19 patients all over the world. The objective of this study was to determine the challenges of nurses in management of COVID-19 patients in tertiary hospital.

**Methods:** This was a descriptive cross-sectional study conducted in two tertiary level government hospitals namely Dhaka Medical College Hospital (DMCH), Dhaka and dedicated corona isolation hospital, an extended part of Rangpur Medical College Hospital (RpMCH), Rangpur, Bangladesh from January to December 2020. Data were collected through face to face interview using a semi structured questionnaire containing demographic details and the challenges faced by the nurses in COVID-19 patients' management where 240 nurses were selected conveniently. The collected data were processed and analyzed meticulously with the help of SPSS (Version 26).

**Results:** The findings revealed that the mean age of the respondents were 30.22 ( $\pm 5.6$ ) years. The majority (79.2%) were female. Most (59.6%) of the participants were within 26 to 30 years and majority (61.3%) of participants completed diploma in nursing, 7.8% were pregnant, 10.4% having children less than 2 years and 59.6% participant lived in nuclear family. Among the participants, 51.7% got donning and doffing training and majority (72.1%) of participants did not get infection control training. The findings of the study showed that 68.7% participants considered that the available resources were not adequate to manage this situation and 62.9% of participants considered that the supply of N95 or equivalent mask was not sufficient. About 52.1% of participants believed that the available manpower was not adequate to manage this situation. More than half (69.2%) of participants believed that the available equipment was not enough to manage this situation and 50% thought that there was a shortage of medical crash cart with emergency medication. The findings of the study showed that 86.7% of participants were highly concerned about family safety and 60% of participants were worried about their safety during caring COVID-19 Patients.

**Conclusion:** The most common challenges faced by nurses were shortages of resources, manpower and equipment, lack of training and concern about personal and family safety. The findings of the study will be helpful for the authority to develop policy to ensure quality and sustainable health care development.

**Key Words:** Challenges; Nurses; Management; COVID-19; Patients; Tertiary Hospital



## Experiences of Medical Students regarding e-learning in COVID-19 Pandemic

M. Farjana<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Maisha Farjana, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Koorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** World population is experiencing huge death toll due to COVID-19 pandemic with panic and uncertainty. Students using the electronic media for study, called e-learning, became the budding word in these days. This study aimed to determine the experiences of the medical students regarding e-learning during COVID-19 pandemic.

**Methods:** This cross-sectional study was carried among conveniently selected 207 medical students of Kumudini Women's Medical College and Hospital. Data were collected through face-to-face interview by using a structured questionnaire. Then data were analyzed using a computer program SPSS (Statistical Package for Social Sciences) version 26.

**Results:** Among 207 respondents, 67.1% had good experience and 32.9% had bad experience during e-learning. Among all of them, 54.6% were within 21-23 age with mean age  $21.82 \pm 1.71$  years. Among all, 69% of respondents lived in urban and they had good experience of e-learning. Among them most of the students (22.7%) were in 2nd year and they had good experience of e-learning. Among all, 87.4% used mobile devices and 35.3% used computer device. Of all of them, 46.4% used mobile network and 21.3% used broadband network. All respondents were found using zoom application as the media of e-learning, whereas 86.5% respondents used WhatsApp. Almost all (99%) respondents were able to provide the feedback of e-learning session through item examination. Of all the respondents, 98% had knowledge of e-learning and had good experience of e-learning. Among all, 74.4% found that e-learning session was helpful to prevent their learning gaps during this pandemic situation, of them 87% respondents actively interacted with their facilitator by raising their hands during the e-learning sessions. Regarding practical session, 99% found it difficult to perform their practical classes through e-learning sessions. Of all of them, 57.5% expressed their internet speed was average during the e-learning session.

**Conclusion:** Most of the respondents in this study had a good experience of e-learning. However, there are many challenges including difficulty in practical classes, speed of the internet services, electricity interruption and physical problems considered as roadblock for proper utilization of the benefit of the e-learning.

**Key Words:** Experiences; Medical Students; e-learning; COVID-19; Pandemic





## Experiences of Post-graduate Nurse Students regarding Online Learning during COVID-19 Pandemic

P.R. Kundu<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Poly Rani Kundu, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The emergence of the COVID-19 pandemic resulted in a sudden transition to online learning. However, this new platform presented many challenges for students especially for nursing education programs which are traditionally conducted in a face-to-face learning environment. The study aimed to assess the experiences of post-graduate nurse students regarding online learning during COVID-19 pandemic.

**Methods:** This descriptive type of cross-sectional study was conducted among 346 respondents from four institutions of Dhaka city from January to December 2021. Respondents were enrolled in the study using convenient sampling technique. Data were collected by face to face interview with a semi-structured questionnaire.

**Results:** The mean age of the respondents was  $38.3 \pm 6.0$  years while majorities (83.8%) were female. Among the 346 respondents, 82.7% were from urban areas and 88.4% were from private institution. Half of the respondents (50.9%) stated that the internet quality was average while 47.4% respondents specified it as good. While exploring the advantages of online learning, 86.1% stated that it always saved time, 85.5% always found it as an effective way of learning, 80.3% always enjoyed it and 91.9% stated that it always saved transportation cost. However, 34.1% stated that online learning was not a substitute of traditional learning. Moreover, 86.7% stated that they had no opportunity for field visit and 64.7% stated that they had no practical classes. One third respondents (32.4%) had physical problems. Around 67.6% respondents had no experience of online learning before COVID-19 pandemic, 4% respondents did not have any typing skill in computer before online learning and 2.9% respondents did not use Microsoft office (word, Excel) before pandemic. Younger ( $p=0.022$ ), male ( $p=0.028$ ), married ( $p=0.005$ ), urban respondents ( $p=0.003$ ), respondents of nuclear family ( $p=0.012$ ), respondents of post basic BSc in nursing ( $p<0.001$ ) and respondents of private institution ( $p<0.001$ ) always enjoyed online learning more than others. Urban respondents ( $p=0.004$ ), respondents with BSc nursing ( $p=0.014$ ) and respondents of private institution ( $p<0.001$ ) felt online learning more comfortable than others.

**Conclusion:** Post-graduate nurse students had positive experience of online learning like flexible time schedule, comfortable, time saving, cost effective, updated and effective amidst COVID-19 pandemic.

**Key Words:** Experiences; Post-graduate Nurse Students; Online Learning; COVID-19; Pandemic



## Health Care Facilities for Senior Citizens in Selected Tertiary Hospitals during COVID-19 Pandemic

S.B. Ali<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Sathi Binte Ali, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic is impacting the global population in drastic ways and in many countries, older people are facing the most serious threats and challenges. The objective of the study was to assess the health care facilities provided for senior citizens in selected tertiary hospitals during COVID-19 pandemic.

**Methods:** The descriptive cross-sectional study was conducted at Dhaka Medical College Hospital and Bangabandhu Sheikh Mujib Medical University from January 2020 to December 2020. Convenient sampling technique was used to select 305 service providers. The research instruments were pre-tested semi structured questionnaire and an observation checklist.

**Results:** Among participants, administrator 2.6%, doctor 25.2% and nurse 72.1%. Mean age of the respondents was 32.72 ( $\pm 7.7$ ) years. Most (90.8%) of the respondents' working experience was less than 10 years and their average monthly income was Tk. 35398.9 $\pm$ 16509.1. In DMCH separate geriatric ward was present but in BSMMU geriatric ward was absent. Separate bed facility in general wards, geriatric ICU and COVID ward were absent in both hospitals. Majority (97%) of the respondents took consent before any procedure, 89.6% service provider involved geriatric patients in decision making about their care and treatment and 56.6% respondents followed polypharmacy guideline. Diagnostic facilities, essential drugs and sterilization facilities for senior citizens was moderately sufficient according to 50.5%, 60.6% and 59.3% respondents respectively and ambulance service was insufficient according to 53.4% respondents. Among respondents, 89.8% faced barriers in providing geriatric healthcare. Regarding improvement of healthcare services, 26% mentioned that training was needed for doctors/nurses, 20.8% mentioned of separate geriatric ward facilities for geriatric patients, 16.2% mentioned about increasing the number of supporting staff, need of free healthcare facilities for poor elderly patients mentioned by 11.8%, 10.6% mentioned about training of supporting staffs, 7.4% mentioned about training for informal/family caregiver and 6.4% mentioned about need for separate bed for geriatric patient in general wards. Analysis found statistically significant ( $p < 0.05$ ) associations between national guideline following for the treatment and care of older patients and respondents' educational qualification and designation. Statistically significant association was found between polypharmacy guideline following for the treatment and care of older patients and respondents' designation.

**Conclusion:** To provide quality healthcare service to the senior citizens of Bangladesh, geriatric health care should be given highest priority.

**Key Words:** Health Care Facilities; Senior Citizens; Tertiary Hospitals; COVID-19; Pandemic



## Health Care Seeking Behaviour of Urban Senior Citizens during COVID-19 Pandemic

S. Haq<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Salma Haq, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The whole world's population is greying. Senior citizens with various chronic diseases are more vulnerable to suffer from the worst outcome of COVID-19. They have some fear to visit health center for routine medical check-up. Thus, a study was conducted to assess the health care seeking behavior of urban senior citizens during COVID-19 pandemic.

**Methods:** The cross-sectional study was conducted among 208 senior citizens (60 years and above) from two urban area of Dhaka City from January to December 2021. The technique of sampling was convenient method. Data were obtained using a pre-tested semi-structured questionnaire by face-to-face interview.

**Results:** Among 208 respondents, 73.6% were male and 26.4% were female, 82.7% belonged to age group 60-69 years and 32.2% completed their graduation. Majority (88%) of the respondents had co-morbidities. For seeking health facilities, 26.4% preferred government hospital, 36.5% private hospital and 19.7% private practitioners. A significant association was found between co-morbidities and treatment seeking place ( $p < 0.05$ ). About 30.3% respondents went for regular checkup during pandemic once in 6 months and 14.9% remained at home. About 81.5% maintained their regularity of prescribed treatment. Almost 39.9% cancelled their scheduled appointments out of which 30.1% due to fear of getting affected by COVID-19. Most of the respondents (93.3%) preferred allopathic treatment and only 14.9% tried self-medication during pandemic. About 51.4% respondents agreed and 38% strongly agreed about being in high risk for their age. About 69.2% of the respondents were concerned about getting healthcare during pandemic and cancelled their scheduled appointment. A significant association was found between these variables ( $p = 0.004$ ). The key barriers to seek healthcare were risk of getting infection from other patients and healthcare providers according to 60.1% and 49.6% respondents consequently and finding transport was difficult during pandemic according to 54.8% respondents.

**Conclusion:** In the study, respondents preferred health seeking facilities from private hospital and private practitioners than government facilities. The government should take necessary steps in government health facilities so that the senior citizen can get more service.

**Key Words:** Healthcare Seeking Behaviour; Urban; Senior Citizens; COVID-19; Pandemic



## Health Problems and Quality of Life among Recovered COVID-19 Patients

A. Akter<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Aklima Akter, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The novel corona virus named SARS-CoV-2 is existing for more than 2 years and causing COVID-19 disease. Its impact over the health and quality of life is increasing day by day. The study, aimed to determine the health problems and quality of life among recovered COVID-19 patients attending on post COVID unit.

**Methods:** This was a cross-sectional study conducted among 201 respondents, who recovered from COVID-19 in one and half to six months ago by RT-PCR lab. Convenient sampling technique was used for data collection. Data were collected by self-administered structured questionnaire from each respondent. A structured questionnaire was used as a research instrument, which included WHOQOL-BREF scale to evaluate quality of life along with socio-demographic characteristics and health problems of the respondents.

**Results:** The result showed that 26.4% respondents' age was between 30 to 39 years, 59.2% were male, 91.5% were Muslim, 75.6% were married, 35.3% of them completed graduation, 40.3% were on service, 80.1% lived in urban area and 33.3% had monthly income 20,000 to 39,000 Bangladeshi taka. The result also showed that 61.2% developed physical symptoms and 51.7% developed psychological symptoms after recovery from COVID-19 those were combinedly called health problems in the study. In case of quality of life, the highest mean score was found in the environmental domain ( $26.66 \pm 1.89$ ), followed by physical domain ( $21.67 \pm 2.35$ ), psychological domain ( $21.16 \pm 1.83$ ) and lastly social domain ( $11.02 \pm 1.24$ ). The higher the score, the better was quality of life. The study showed that, there were significant associations between health problems and domains of quality of life, such as physical symptoms with environmental and psychological domain of QOL and psychological symptoms with total QOL showed statistically significant associations ( $p < 0.05$ ).

**Conclusion:** The findings suggested that presence of physical and psychological symptoms was associated with lower quality of life. All this should be taken into consideration. Health problems should be minimized and measures should be taken to improve quality of life as this is a fundamental aspect.

**Key Words:** Health Problems; Quality of life; Recovered; COVID-19; Patients



## Health Service Management of Coronary Care Unit in Public Tertiary Level Hospital during COVID-19

M. Akter<sup>1</sup>, M.A. Alam<sup>2</sup>

<sup>1</sup>Musumi Akter, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Mohammad Ashraful Alam, Supervisor and Assistant Professor (Occupational and Environmental Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The novel coronavirus disease 2019 (COVID-19) pandemic, which is caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has disrupted the world order. Cardiovascular diseases (CVDs) have risen to become the major cause of death, with 80 percent of cardiovascular fatalities occurring in developing countries. The aim of the study was to assess the Health Service Management of Coronary Care Unit (CCU) in Public Tertiary Level Hospital during COVID-19 Pandemic.

**Methods:** A descriptive type of cross-sectional study was conducted among 105 doctors, nurses and word boy/aya working at CCU in Dhaka Medical College Hospital, Dhaka. The duration of the study was one (01) year from January to December 2021. A purposive sampling technique was adopted and a semi-structured questionnaire was used to collect data from respondents.

**Results:** The mean age of respondents was 35.72±8.87 years. The majority of respondents were female. The result showed that 81.9% of services available were fair and 1.9% were poor, 79.8% equipment and 86.9% medication were available in CCU. Opinions of 62.9% respondents were good and 37.1% were fair regarding equipment and medication in CCU during COVID-19 pandemic. Regarding safety and security management in CCU during COVID-19 pandemic, 62.9% respondents' opinion was good, followed by 30.5% respondents' opinion was fair and rest 6.7% respondents' opinion was poor. There was a significant relationship between designation and patients' co-operation (p=0.043).

**Conclusion:** Adequately trained health workers, proper communication and availability of medicine and equipment will be helpful for better management of the coronary care unit.

**Key Words:** Health Service; Management; Coronary Care Unit; Public Tertiary Level Hospital; COVID-19





## Home Isolation Practice of COVID-19 Patient

A. Anjum<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Amina Anjum, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Many people have maintained home isolation due to COVID-19 outbreak. Despite of being conscious and frequent monitoring, so many risks and hazards are possible. The objective of this study was to determine home isolation practice of COVID-19 patients.

**Methods:** This cross-sectional study was conducted in Dhaka city from January 2020 to December 2020 with 201 respondents among which female were 100 and male were 101 in number. Data were collected through face to face interview by using a semi structured questionnaire.

**Results:** Among the participants, 66.2% participants were RT-PCR positive and 30.8% respondents maintained their isolation until RT-PCR sample became negative. Vital signs were monitored at least once in a day by 35.8% patients and 59.2% respondents were totally aware of alarming symptoms of COVID-19. Among them 52.5% patient chose isolation as per doctor's advice. Respondents faced various problems and 92.5% respondents had fever and 64% lost their taste and smell sensation. OTC drugs were taken by 97% patients and 58.8% patients took herbal tea as remedy. Along with OTC drugs some patient took other drugs also. Doxycycline was taken by 18.4% patients and 11.9% patients took Azithromycin. Medical advice was obtained by 53% patients via telemedicine and 41% patients obtained from their family doctor. Among them, 83.1% patients took citrus fruit and other nutritious food along their regular home food. Family members prepared food for 56.7% patients. Grocery was managed by 35.8% patients by online order service and waste was disposed separately in plastic bags by 74.6% patients. Among all, 63.7% respondents didn't share their room in isolation and 77.6% patients didn't share their personal equipment. In home isolation 51.2% patients didn't do any physical activities. Among them 30.3% patients spent most of their time by praying and 29.9% patients used to browse internet most of the time. Breathing exercise was practiced by 43.3% patients and 20.4% patients daily used to sit under the sunlight for sometimes. Coughing sneezing etiquette was followed by 65% patients and 65.2% of them washed or sanitized their hand after coughing or sneezing. Among all, 59.2% patients had mask and 42.2% patients used mask while going outside. Take care of the patients was mostly done by family members (55.2%). Family members of 60.7% respondents were also affected. The social distancing, home isolation and security measures affected daily life of the patients as well as their family members.

**Conclusion:** To mitigate effect of coronavirus, people diagnosed with COVID-19 should maintain home isolation strictly and should take remedies as per doctor's advice.

**Key Words:** Home Isolation; Practice; COVID-19; Patient



## Job Satisfaction and Associated Factors among Nurses working in COVID-19 Dedicated Tertiary Public Hospital

T. Rahman<sup>1</sup>, B.K. Riaz<sup>2</sup>

<sup>1</sup>Dr. Tanzim Rahman, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Baizid Khorshid Riaz, PhD, Supervisor and Head, Department of Public Health and Hospital Administration and Director, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 has brought healthcare workers in general and nurses in particular into the limelight as never before and has burdened them with immense responsibility. It is important to study the intensity of the impact of this pandemic on this profession. This study aimed to assess the occupational satisfaction during the pandemic of COVID-19 among the nurses in a COVID-19 dedicated tertiary public hospital, to shed light on conditions of work and to identify factors associated with low occupational satisfaction. Therefore, the aim of this study was to better understand the factors that influenced the nurses' working environment.

**Methods:** A descriptive type of cross-sectional study was conducted. The study included 210 nurses from COVID-19 dedicated unit of Dhaka Medical College and Hospital. The collected data were checked, scored and transferred into SPSS 26th version for analysis. Mean, SD, frequency and chi-square test were calculated.

**Results:** The mean age of respondents was 33.2 years ( $\pm 10.26$ ), minimum age was 25 years, maximum age was 57 years. Out of 210 nurses, 172 (81.9%) were female and 38 (18.1%) were male. The study showed that 106 (50.48%) had Diploma and 87 (41.43%) had BSc. in nursing and 17 (8.1%) had MPH degree. Average monthly salary was 24628.57 ( $\pm 4748.72$ ) Tk. The study showed that mean duration of job was 4.01 ( $\pm 3.82$ ) years. The study found 83.81% were moderately satisfied with their jobs and 10.95% of the nurses were undecided. The study found significant associations between job satisfaction and current salary ( $p < 0.001$ ), provision of training ( $p < 0.001$ ), safety of working environment ( $p < 0.001$ ), supervisor's appreciation ( $p < 0.001$ ) and appreciation by colleagues ( $p < 0.001$ ).

**Conclusion:** The study showed moderate level of job satisfaction of the nurses working in the COVID-19 dedicated unit of DMCH. To ensure high quality health service, steps must be taken to improve the job satisfaction of the nurses.

**Key Words:** Job Satisfaction; Factors; Nurses; COVID-19; Tertiary Public Hospital



## Knowledge and Practice of Intern Nurses on COVID-19 Infection Prevention

S. Khanam<sup>1</sup>, K. Akhtar<sup>2</sup>

<sup>1</sup>Sumaiya Khanam, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Khursheda Akhtar, Supervisor and Associate Professor (Reproductive and Child Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Future nursing services mostly depend on the knowledge and practice of intern nurses including infection prevention and control (IPC). The objective of this study was to assess the level of knowledge and practice of intern nurses on COVID-19 infection prevention.

**Methods:** This cross-sectional study was conducted among 211 intern nurses selected by convenient sampling technique from four nursing educational institutes of Dhaka city. Data were collected by face to face interview with the help of a semi-structured questionnaire. The study period was one year (2021) including three weeks of data collection time. Informed written consent was obtained from all the participants, confidentiality and anonymity were maintained, all data were secured and statistical analysis was done by SPSS and Microsoft excel.

**Results:** Among 211 respondents, mean age was 22.96 years (SD  $\pm 0.86$ ), 86.3% (182) respondents were female, 82% were Muslim. Among respondents, 45.5% were from Government institutes, 40.3% were from private and 14.2% were from autonomous institutes. The mean duration of clinical practice (CP) was 7.75 weeks (SD  $\pm 5.03$ ). Among respondents, 93.4% obtained information from social media, 49.3% from other sources. Around 97.2% had correct knowledge regarding the duration of handwashing, but only 16.1% had proper knowledge regarding standard precaution (SP). Regarding total knowledge score among intern nurses, 78.2% had good, 21.3% had fair and 0.5% had poor score with a mean of 20.31 (SD  $\pm 1.96$ ). Total practice score was good in 76.8% and 20.4% had fair practice and 2.8% had poor practice, mean 43.52 (SD  $\pm 5.65$ ). Association between total practice score and barriers like maintaining social distance, water supply, soap supply, hand sanitizer supply, waste bin supply and logistic supply in working place was statistically significant ( $p < 0.05$ ). There was an association between total knowledge score and total practice score ( $p < 0.05$ ).

**Conclusion:** Most of the respondents in this study had good knowledge and good practice. The main sources of information were academic curriculum, training on IPC, social media, television and the DGHS website. Barriers were associated with less practice score. Regarding different barriers on IPC that were identified in this study should be addressed judiciously.

**Key Words:** Knowledge; Practice; Intern Nurses; COVID-19; Infection; Prevention



## Knowledge and Practice of Medical Technologists on COVID-19 Infection Prevention in Laboratory

M.R. Khatun<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Most. Rabeya Khatun, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 is an acute respiratory condition caused by a virus and it is declared as pandemic. Health sector faces a challenge and medical technologists are in direct contact of infected patients and sample. The study was to assess the knowledge and practice of medical technologists on COVID-19 infection prevention in laboratory in tertiary level hospitals and institutes of Dhaka city.

**Methods:** A descriptive cross-sectional study was conducted among purposively selected 221 medical technologists working in six hospitals and institutes (public hospitals and institutes) in Bangladesh. Data were collected by self-administrated structured questionnaire.

**Results:** Among the respondents, 63% were male and 37% were female, 87.3% were Muslim and 57% lived in joint family. About 59.7% were government service holder and 40.3% were voluntary service holder working in public hospitals and institutes where RT-PCR test was done. Association was statistically significant ( $P=0.004$ ) between establishments of job and training about sample packaging of COVID-19 infection. Association was statistically significant ( $p=0.01$ ) between job establishments and clean shared surface. The study ( $n=221$ ) revealed that 100% respondents had knowledge about donning and doffing of PPE, 100% of the respondents knew that RT-PCR was confirmatory test for COVID-19 infection, 100% of the respondents knew cause of COVID-19 by virus, 75.1% of the respondents did not get training about COVID-19 sample packaging and 64.3% of the respondents did not get training in laboratory safety against COVID-19 infection. All the respondents (100%) maintained accurate time, pressure and temperature for autoclave, 99.5% of respondents used color code bin for waste disposal, around 99.5% of the respondents used respiratory safety cabinet and 96.8% of the respondents used PPE during sample processing. Among the respondents, 67.9% were not in quarantine during COVID-19 pandemic. More than half (59.3%) of the respondents were always following infection prevention guideline.

**Conclusion:** Through periodic training and motivation, adequate supply of resources and infection prevention materials and quarantine facility for medical technologists should be available in hospitals and institutes that can improve overall knowledge and practice on COVID-19 infection prevention of medical technologists.

**Key Words:** Knowledge; Practice; Medical Technologists; COVID-19; Infection; Prevention; Laboratory



## **Mental Stress of the Spouses of the Physicians working in COVID-19 Dedicated Tertiary Public Hospitals**

E.Z. Shawan<sup>1</sup>, K. Akhtar<sup>2</sup>

<sup>1</sup>*Dr. Esrat Zahan Shawan, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.*

<sup>2</sup>*Dr. Khursheda Akhtar, Supervisor and Associate Professor (Reproductive and Child Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.*

### **ABSTRACT**

**Background:** The COVID-19 pandemic originated in China in December 2019, amid high uncertainty, social and economic disruption and media reports of panic. The objective of the study was to assess the state of mental stress of the spouses of the physicians working in COVID-19 dedicated tertiary public hospitals.

**Methods:** A descriptive cross-sectional study was conducted among 265 spouses of the physicians working in COVID-19 dedicated tertiary public hospitals. The study period was from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. Respondents were selected on the basis of inclusion and exclusion criteria and samples were taken by purposive sampling technique. Data were collected by face-to-face and telephone interview through a pretested semi-structured questionnaire. To assess the state of mental stress, PSS (perceived stress scale) was used.

**Results:** Among 265 respondents, 38.5% were male and 61.5% were female. Majority of the respondents (44.2%) were belonging to the age group 31 to 35 years. Among them, 72.8% had children and 49.8% had senior citizens in their families. About 12.8% were neglected by friends, 66.84% faced disturbances in ensuring parental care to child, 78.1% had to perform outdoor activities, about 91.7% respondents had fear of being infected with COVID-19, 66.4% had problem with sleeping disorders, 37.4% had problem with memory loss and 54.7% had trouble in making right decisions. Among 265 respondents, level of mental stress of respondents by perceived stress scale, around 206 (77.7%) respondents were at the level of moderate stress, 28 (10.6%) were in low mental stress and 31 (11.7%) were in high mental stress. Statistically significant associations were found among level of stress and gender of the respondents ( $p=0.039$ ), respondents with children ( $p=0.004$ ) and with senior citizens ( $p=0.006$ ) in family, being neglected by friends ( $p=0.005$ ), facing disturbance in ensuring parental care to child ( $p<0.0001$ ), having any disturbance in conjugal life ( $p<0.0001$ ), fear of being infected ( $p=0.007$ ), sleeping disorder ( $p=0.001$ ), memory loss ( $p<0.0001$ ) and making right decisions ( $p<0.0001$ ).

**Conclusion:** Majority of the spouses of the physicians were in moderate stress. So, monitoring and counseling of these conditions are needed.

**Key Words:** Mental Stress; Spouses; Physicians; COVID-19; Tertiary Public Hospitals





## Occupational Stress among Nurses working in a COVID-19 Dedicated Tertiary Public Hospital

M. Debnath<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Mitun Debnath, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Nurses are constantly confronted with difficult situations in the context of infectious epidemics, like COVID-19 pandemic that can lead to high levels of occupational stress. This study aimed to assess the level of occupational stress among nurses working in a COVID-19 dedicated tertiary public hospital.

**Methods:** This descriptive cross-sectional study was conducted at Dhaka Medical College Hospital (DMCH) from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. Taking informed written consent from the nurses working in DMCH, data were collected by convenient sampling technique from 187 respondents by face to face interview using a semi structured questionnaire. Expanded Nursing Stress Scale (9 subscales, 57 items) and Likert Scale (5 point) were used to assess the level of occupational stress among respondents.

**Results:** Among the 187 respondents, 75.4% (141) had mild stress (score 58-114), 14.4% (27) respondents had moderate to severe stress (score 115-228) and 10.2% (19) respondents had no stress (score<58). Among the respondents, mean score of dealing with death and dying was 15.59 (SD  $\pm$ 3.80) which was the most stressful factor, followed by mean score of dealing with patients and their families was 14.81 (SD  $\pm$ 4.13) and workload was 14.43 (SD  $\pm$ 6.39). Mean score of discrimination was 3 (SD  $\pm$ 1.74), the least stressful factor of occupational stress of nurses. In this study there was significant association between level of occupational stress and age groups ( $p < 0.05$ ).

**Conclusion:** Majority of the nurses experienced mild level of occupational stress. Dealing with death and dying, dealing with COVID-19 infected patients and their families, workload and uncertainty concerning treatment were the major stressful factors of occupational stress. Specific preventive measures like training of nurses on dealing with COVID-19 infected dead and dying patient, dealing with stressful situations prior to involvement in care of COVID-19 infected patient, workload coping strategies and other supporters like enhancing supervisor support, provision for more breaks, promoting of staff rewards etc. both at individual and managerial levels can minimize occupational stress and stress factors to get quality services by nurses.

**Key Words:** Occupational Stress, Nurses; COVID-19; Tertiary Public Hospital



## Psychological Well-being of Secondary Level School Students during COVID-19 Pandemic

A. Khatun<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Ambia Khatun, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 outbreak has been identified as a major cause of public health threats and it has great impacts on daily life and psychological well-being of general population including students. The aim of the study was to assess the level of psychological well-being of secondary level school students during COVID-19 pandemic.

**Methods:** A descriptive type of cross-sectional study was conducted from January to December 2021 among secondary level school students in Moulvibazar District. Data were collected through a pre-tested semi-structured questionnaire containing socio-demographic characteristics, COVID-19 pandemic, online learning related information and psychological well-being of the students. Respondents were taken through convenient sampling method.

**Results:** The result showed that 53.7% of the students were in Class X with an average 15.17 years of age and 52.3% were male, 58% living with nuclear family, 84% mother's occupation was housewife, 50% father's occupation was business, 39.4% felt family crises due to COVID-19, 39.9% students worried about continuation of study, 52% were participating regularly in spiritual activities during pandemic, around 60.6% felt nervousness, 57.8% felt loneliness and rumination, 94.5% had regularly practiced hand washing, 89.9% were maintaining personal hygiene behavior, 97.2% were maintaining social distance, 96.8% were wearing mask during going outside, 89% were not COVID-19 vaccinated and 85.3% were thinking about need of raising public awareness. Most of the students (91.3%) used smartphone device, 86.7% used Google Meet communication tools for online learning, 57.3% felt happy with time allocation of online classes. The average score of psychological well-being was 44.45 and 59.7% have moderate level PWB. Pearson product-moment correlation analysis findings revealed that gender, types of family, kinds of house, mothers' occupation and participation in spiritual (religious) activities of the students were significantly correlated with psychological well-being of secondary level school students during COVID-19 pandemic at  $p < 0.01$  and  $p < 0.05$ .

**Conclusion:** To promote and improve psychological well-being, awareness and intervention programs are needed for students. Further study for factors identification is recommended for development of PWB of secondary level school students during COVID-19 pandemic.

**Key Words:** Psychological Well-being, Secondary Level School Students, COVID-19; Pandemic



## Quality of Life of COVID-19 Patients attending in Selected Post COVID Units

M.R. Rahman<sup>1</sup>, K. Akhter<sup>2</sup>

<sup>1</sup>Dr. Md. Raziur Rahman, Student of MPH (Health Service Management and Policy) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Khursheda Akhter, Supervisor and Associate Professor (Reproductive and Child Health), Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Quality of life is the standard of health, comfort and happiness experienced by an individual or group. It is the degree to which an individual is healthy, comfortable and able to participate in or enjoy life events. It may impair or alter after any disease process as well as disease outbreak. The novel corona virus named SARS-CoV-2 existing more than 1 year and creating COVID-19 disease for human being. Its impact over the quality of life is increasing day by day. This study aimed to determine the state of quality of life of COVID-19 patients attending in post COVID units.

**Methods:** Total 90 respondents were selected conveniently from post COVID units of Dhaka Medical College Hospital and Bangabandhu Sheikh Mujib Medical University. Data were collected through face to face interview using a pre-tested semi structured questionnaire.

**Results:** The result showed that 42 (46.7%) respondents' age was between 30 to 39 years, 53 (58.9%) of them were male, 81 (81%) of them were married and 81 (81%) were Muslim, 60 (66.7%) of them completed their graduation, about 29 (31.9%) were on government job and 27 (29.7%) were on private job and 37 (42.2%) of them earned above 60,000 Taka. The result showed that 44 (48.9%) respondents needed hospital admission and 39 (45.6%) required oxygenation, 75 (83.4%) developed post COVID weakness and 63 (70%) of them developed cough, 61 (67.8%) of them developed post COVID insomnia and 57 (63.3%) developed depression. The study also showed that 67 (73.3%) respondents had 8-12hrs working capability in pre COVID period; that declined for 30 (33.3%) respondents in post COVID period. In pre COVID period, 67 (74.4%) respondents did exercise where in post COVID period only 40 (44.4%) did exercise. The result also showed that in post COVID period among the respondents, 62 (68.9%) developed interrupted sleep, 52 (57.8%) were dissatisfied with their health, 51 (56.7%) gave a little concentration in their everyday life, 50 (55.6%) were dissatisfied with their working place, 56 (62.2%) had little amount of money to meet their need and 66 (73.3%) of them seemed their quality of life as poor.

**Conclusion:** Findings from the study can be useful for policymakers as well as government for establishing more effective and specialized follow-up center over the country. Thus, the people can get proper follow-up care and retain their quality of life.

**Key Words:** Quality of Life; COVID-19; Patients; Post COVID Units



## Work Performance of Nurses working in COVID-19 Dedicated Tertiary Public Hospital

S. Sultana<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Sharmin Sultana, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Work performance of nurses refers to the set of nursing activities or behaviors that are performed by nurses and directed toward the recovery and well-being of the patients assigned to their care. During COVID-19 pandemic nurses perform a pivotal role in managing the COVID-19 patients in hospitals. The study aim was to assess the level of work performance of nurses working in COVID-19 dedicated tertiary public hospitals.

**Methods:** A descriptive type of cross-sectional study was conducted from January to December 2021 within 223 nurses. The sample was selected based on non-probability purposive sampling technique. The data were collected by using self-administered structured questionnaire (6DSNP and self-administered variables) from two COVID-19 Dedicated Tertiary Public Hospitals (Kuwait Bangladesh Friendship Government Hospital and Sheikh Russel Gastro-liver Institute and Hospital).

**Results:** The study findings mentioned that 68.2% respondents were between the age of 21-30 years, mean age was 28.6 ( $\pm 4.66$ ) years and 94.6% respondents were female. In educational level, 67.3% respondents had diploma degree, 21% respondents were post-graduate and 11.2% were graduate. About 49.3% respondents were working in COVID-19 positive ward, 62.8% respondents had >7 years experience, 67.3% respondents disliked night shift and 68% mentioned short manpower was the cause of disliking that shift. Their average work performance on planning of direct patient-centered work was  $3.52 \pm 0.77$ , critical care of direct patient-centered work was  $3.79 \pm 0.38$ , teaching/collaboration of direct patient-centered work was  $3.33 \pm 0.71$ , communication of direct patient-centered work was  $3.68 \pm 0.53$ , additional variable of direct patient work was  $3.77 \pm 0.47$ . In addition to their average performance on leadership of non patient-centered work was  $3.49 \pm 0.69$ , professional development of non patient-centered work was  $3.35 \pm 0.69$ , and also their performance on indirect patient work was  $3.53 \pm 0.7$ . The average work performance of the respondents was  $3.55 \pm 0.62$ .

**Conclusion:** Quality of nursing care should be improved by enhancing nurses' competency, which can influence to grow faith in people's mind to treat their health inside the country as well as reduce trend to move abroad for better treatment.

**Key Words:** Work Performance; Nurses; COVID-19; Tertiary Public Hospital



## Work Related Quality of Life and Associated Factors among Recovered Physicians from COVID-19

F. Yasmin<sup>1</sup>, A.N.M.S. Islam<sup>2</sup>

<sup>1</sup>Dr. Farzana Yasmin, Student of MPH (Health Service Management and Policy) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. ANM Shamsul Islam, Supervisor and Associate Professor, Department of Public Health and Hospital Administration, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** This study aimed to assess the level of work-related quality of life and identify associated factors among recovered physicians from COVID-19.

**Methods:** A descriptive cross-sectional study was conducted from January to December 2021 among 205 COVID-19 recovered physicians from DMCH, BSMMU, KBGFH and DNCC dedicated COVID-19 Hospital. Data were collected by pre-tested structured questionnaire and WRQoL scale-1 were used to measure the work-related quality of life.

**Results:** Among the 205 respondents, around 58% were from the age group 24-33 years, 53% were male, 89% were Muslim and 76% were married. About 62.4% of respondents were from DMCH, 22% from BSMMU, 9.8% from KBGFH and 5.9% were from DNCC dedicated COVID-19 hospital. Around 70% of respondents were Government employees. About 71% belonged to nuclear families. About 25.8% had history of co-morbidities such as Asthma, HTN etc. No respondent developed any co-morbidity after COVID recovery. About 55.1% and 43.4% of respondents were suffering from various physical and psychological symptoms of COVID-19 like weakness, fatigue, body pain, insomnia and anxiety etc. Almost half of the respondents maintained COVID-19 protocol. Almost 80% of respondents felt difficulties to wear PPE. About 36.1% of respondents mentioned that their hospitals maintained infection control measures. The study showed WRQoL mean $\pm$ SD was 73 $\pm$ 11.58 where 54.2% of the respondent had lower QoWL, 26.8% and 19% had average and higher QoWL respectively. Sub scale measurements for GWB was 45.9% average QoWL, 38% lower QoWL and 16.1% higher QoWL. HWI was 60% lower QoWL, 22.9% average QoWL and 17.1% higher QoWL. JCS was 40% average QoWL, 35.6% higher QoWL and 24.4% lower QoWL. CAW was 39% average QoWL, 35.6% lower QoWL and 24.4% higher QoWL. WCS was 70.2% lower QoWL, 17.1% average QoWL and 12.7% higher QoWL. The last subscale SAW was 74.1% lower QoWL, 20% average QoWL and 5.9% higher QoWL. Associations were found and respondents getting break time during work ( $p=0.002$ ), their hospitals maintaining infection control measure ( $p=0.016$ ) and psychological symptoms ( $p=0.026$ ) between work-related quality of life.

**Conclusion:** The study showed, 54.2% recovered physicians had lower work related quality of life. This study will be helpful for the policymakers to understand the physicians work related quality of life and take necessary steps to improve that.

**Key Words:** Work Related Quality of Life; Factors; Recovered; Physicians; COVID-19





## Anxiety and Related Factors among Supporting Staff in Dedicated COVID-19 Hospital

M.R. Amin<sup>1</sup>, M.S. Rahman<sup>2</sup>

<sup>1</sup>Dr. Md. Ruhul Amin, Student of MPH (Occupational and Environmental Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Md. Shafiur Rahman, Supervisor and Associate Professor, Department of Occupational and Environmental Health and Program Coordinator, MPH Program, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Novel coronaviruses is causing a viral, infectious, severe acute respiratory illness (COVID sickness 2019). It wreaked havoc on 216 nations and areas by June 16, 2020 (a worldwide health concern). The SARS response harmed the clinical staff both immediately and long-term. To prevent and manage a pandemic, clinicians' mental health needs must be met. It cannot be overstated how important it is to understand how our support workers cope with stress during a pandemic. The purpose of this research was to assess the level of anxiety and related factors among the supporting staff in dedicated COVID-19 hospital.

**Methods:** A cross-sectional study was carried out to assess the level of anxiety and related factors among supporting staff in dedicated COVID-19 hospital. The study population included supporting staff (clinical staff as ward boy, aya, cleaner and non-clinical staff as security guard, driver, lift man, office staff, trolley man) from Dhaka Medical College Hospital, Mugda Medical College Hospital, Kurmitola General Hospital and Kuwait Maitree Hospital providing outdoor and indoor care to patients with suspected COVID-19. Sample size of the study was 337. Data were collected through face to face interview using a pre-tested semi-structured questionnaire containing questions related to anxiety by GAD-7 scale over the course of the last 2 weeks, work place related and environmental factors for anxiety and the socio-demographic characteristics of the supporting staff. Informed written consent was obtained from all participants.

**Results:** This study revealed that about 76.6% (258) of the participants had minimal to mild anxiety, 13.9% (47) of the participants had moderate anxiety and 9.5% (32) of the participants had severe anxiety. Anxiety levels were statistically significantly associated with gender, type of family, provision of PPE supply, supply of food and vegetables, presence of any special condition and/or chronic disease, chronic diseases specially diabetes and bronchial asthma, disturbances in sleeping pattern and trouble as a result of sleep disturbances. No significant association was found between anxiety level with age category and educational qualification.

**Conclusion:** There are needs for umpteen researches so, the dominance and consequences of this corona virus on the mental health of these supporting staffs should be explored with immense significance.

**Key Words:** Anxiety; Factors; Supporting Staff; COVID-19; Hospital



## Anxiety and Sleep Quality of COVID-19 Patients treated in Dedicated COVID-19 Hospitals

M. Shahin<sup>1</sup>, I. Hossain<sup>2</sup>

<sup>1</sup>Dr. Md. Shahin, Student of MPH (Occupational and Environmental Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Irin Hossain, Supervisor, Assistant Professor and Head, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 pandemic in 2020 is associated with a high rate of anxiety and poor sleep quality among COVID-19 patients in the affected countries.

**Methods:** A cross-sectional study was conducted in Bangladesh during the period of January to December 2020 with the objective to assess the level of anxiety and sleep quality of COVID-19 patients. This multicenter study was carried out in three dedicated COVID hospitals of Dhaka. A total of three hundred and six COVID patients were selected purposively from these hospitals according to their bed ratio. Coronavirus Anxiety Scale (CAS) and the Pittsburgh Sleep Quality Index (PSQI) were used to assess anxiety and sleep quality respectively.

**Results:** Almost 87% of the respondents were male and majority was between 51 years to 60 years of age. About 88.6% patients stayed in hospital for 1-10 days. Half of the participants had any kind of chronic disease. Among them, 31% participants had DM and 29.7% had HTN. About 80.6% participants had no smoking history. About 38.2% participants had COVID-19 associated dysfunctional anxiety and 87.9% participants were associated with poor sleep quality. Almost 90.6% participants who had poor sleep quality had COVID-19 dysfunctional anxiety and only 9.4% those who had good sleep quality had COVID-19 dysfunctional anxiety. So, this study suggests that there was a wide range of the Bangladeshi residents who were at higher risk of anxiety and poor sleep quality during COVID-19 pandemic.

**Conclusion:** Policymakers and mental healthcare providers are advised to provide continuous monitoring of the psychological consequences during pandemic and provide mental support.

**Key Words:** Anxiety; Sleep Quality; COVID-19; Patients; Hospitals



## Knowledge and Safety Practice regarding COVID-19 among Rickshaw Pullers in Dhaka City

R. Kairy<sup>1</sup>, I. Hossain<sup>2</sup>

<sup>1</sup>Dr. Rumpa Kairy, Student of MPH (Occupational and Environmental Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Irin Hossain, Supervisor, Assistant Professor and Head, Department of Occupational and Environmental Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** COVID-19 pandemic has now become an international concern without any border. Health of the people specially who belong to low socio-economic status is at risk. Rickshaw pullers are one of them. Most of the rickshaw pullers are migratory from rural community and they maintain a substandard or below standard lifestyle in Dhaka City. They have to go outside for earning livelihood, which may increase the community transmission of COVID-19 infection.

**Methods:** A cross-sectional study was carried out from January to December 2020 with the aim of assessing the level of knowledge, safety practice and attitude regarding COVID-19 among rickshaw pullers of Dhaka city. A total 187 respondents were selected by convenient sampling technique. Data were collected by using a pre-tested semi-structured questionnaire with face to face interview. Only the male respondents aged 18 years or above were selected for the study.

**Results:** Most of the respondents in this study were middle aged (31-43 years). The level of knowledge, safety practice and attitude were found different among the respondents. The level of knowledge regarding COVID-19 among the rickshaw pullers was medium (85.6%). Subsequently the level of safety practice was medium (87.7%) like knowledge. Finally, the attitude regarding COVID-19 among the rickshaw pullers was found to be poor (96.3%). In the study marital status, type of family, having own homestead had a statistical significant association with level of knowledge ( $p < 0.05$ ). The associations between level of practice and marital status, education, use of electricity, monthly family income were found statistically significant ( $p < 0.05$ ). There was no statistically significant association between level of attitude with socio demographic attributes and no participant bore good attitude. Correlations between knowledge, safety practice and attitude regarding COVID-19 among rickshaw pullers were done. There was no relation with the level of knowledge of the respondents with the safety practice, but there was a positive correlation with level of knowledge and level of attitude of the respondents. Simultaneously, with the level of practice of the respondents, there was no correlation with level of attitude. But there was positive correlation with level of attitude and knowledge.

**Conclusion:** The study concluded that accurate knowledge, more positive attitudes and more frequent practices were not remarkable, suggesting strengthening of health education programs aimed at improving COVID-19 related knowledge, which boosts more positive attitudes and maintaining safe sustained practices.

**Key Words:** Knowledge; Safety Practice; COVID-19; Rickshaw Pullers; Dhaka City



## Behavioral and Emotional Difficulties among Adolescent Students during the COVID-19 Pandemic

S. Neaz<sup>1</sup>, A.M.M.N. Karim<sup>2</sup>

<sup>1</sup>Dr. Samantha Neaz, Student of MPH (Reproductive and Child Health) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Abul Masud Md. Nurul Karim, Supervisor and Associate Professor, Department of Epidemiology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Adolescence is a period of physical, psychological and social maturing from childhood to adulthood. Emotional and behavioral problems of adolescents represent a considerable health problem in developing countries. The COVID-19 pandemic forced the home confinement of a significant number of children and adolescents. This study aimed to assess the state of the emotional and behavioral difficulties among adolescent students during this COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted from 1<sup>st</sup> January 2021 to 31<sup>st</sup> December 2021 with a sample of 368 adolescent students of five selected high schools in Dhaka city. Purposive sampling technique was followed for data collection. Data were collected using self-reported validated Bangla version of the Strength and Difficulties Questionnaire (SDQ) and a pre-tested semi-structured questionnaire for socio-demographic factors.

**Results:** Among the students, 46.2% were boys and 53.8% were girls aged 12 to 17 years with a mean age of 15.27 years and 23.6% students belonged to class Nine and 76.4% belonged to class Ten. The majority (82.9%) of the students were member of a nuclear family and the rest (17.1%) belonged to a joint family. Among mothers, 79.9% were homemakers and 20.1% were service holders. On the SDQ scale, 31.8% of the students had abnormal total difficulties scores. The highest rate of the recorded abnormal score was the peer problem (47.3%), followed by conduct problems (24.7%), hyperactivity (20.1%), emotional difficulties (19.8%) and abnormal prosocial behavior (9.5%). The emotional problem, conduct problems and hyperactivity were significantly high among female students (28.3%, 29.8% and 26.2% respectively) whereas peer problems and abnormal prosocial behavior were more prevalent among male students (51.7% and 11.8%). The former was statistically significant and the later was non-significant. About 29.1% of students reported the high negative impact of such problems on their lives and 52.2% of the students were facing these difficulties for over a year. The Total Difficulties Score was significantly associated with the sex of the students ( $p=0.004$ ) and there was no significant association found with other socio-demographic factors.

**Conclusion:** This study showed that the COVID-19 pandemic, the lockdown and social distancing had a detrimental effect on adolescents' mental health. Early detection, periodical assessment and proper intervention in the school with the aid of mental health professionals can help the adolescent cope with this new challenging situation and for a healthy transition into adulthood.

**Key Words:** Behavioral; Emotional; Difficulties; Adolescent; Students; COVID-19; Pandemic



## Depression and Quality of Life of Urban Elderly during the COVID-19 Pandemic

T. Mahmood<sup>1</sup>, A. Begum<sup>2</sup>

<sup>1</sup>Dr. Tarim Mahmood, Student of MPH (Reproductive and Child Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Afroza Begum, Supervisor and Ex-Head, Department of Maternal and Child Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Depression is a very common mental health disorder in elderly people. Quality of life has emerged as a major public health concern as it encompasses overall happiness and well-being of people. This study was aimed to assess whether there was any association between depression and quality of life among urban elderly people during the COVID-19 pandemic.

**Methods:** This descriptive cross-sectional study was conducted in 2020 on 91 elderly people aged 60 years and above. The technique of sampling was convenient method of sampling. The study took place in the urban areas of Dhaka city. A semi-structured questionnaire was used as the research instrument, which included Geriatric Depression Scale-15 to assess depression and WHOQOL-BREF scale to evaluate quality of life, along with socio-demographic characteristics of the respondents. Face to face interview as well as telephone interview was conducted to take information from the respondents. ANOVA, t-test and Pearson correlation were used to estimate the statistically significant differences. A significant p value was considered when p value was less than 0.05.

**Results:** Among the respondents, 30.8% had no depression, whereas 48.4% suffered from mild depression, 15.4% had moderate depression and lastly 5.5% were victims of severe depression. For quality of life, the highest mean score was found in the environmental domain ( $56.92 \pm 15.19$ ), followed by psychological domain ( $51.46 \pm 16.31$ ), then physical domain ( $47.87 \pm 12.88$ ) and lastly social domain ( $46.77 \pm 17.41$ ). The higher the scores, the better the quality of life. Our study showed there was highly significant association between depression and all four domains of QOL ( $p=0.00$ ). The mean age of the respondents was 66.42 with SD  $\pm 5.11$ . About 52.7% were males and the rest 47.3% were females. Almost 31.8% respondents had Hypertension, 31.3% had Diabetes Mellitus, 18.2% had cardiac problems and other respondents had other chronic illnesses. In concern with socio-demographic characteristics, age group with physical and social domain of QOL ( $p=0.00, 0.00$ ), marital status with social domain of QOL ( $p=0.037$ ), monthly household income with all domains ( $p=0.039, 0.008, 0.000$ ) except physical domain of QOL and employment status with all domains of QOL ( $p=0.00, 0.002, 0.00, 0.037$ ) showed statistically significant relationship.

**Conclusion:** The study findings suggested that presence of depression was associated with lower quality of life in all domains concerned. All this should be taken into consideration. Depression should be cured and elderly should be helped out and measures should be taken to improve their quality of life as this is a fundamental aspect.

**Key Words:** Depression; Quality of Life; Urban; Elderly; COVID-19; Pandemic





## Health Related Quality of Life of Female after Recovery from COVID-19

P. Mahajabin<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Dr. Progga Mahajabin, Student of MPH (Reproductive and Child Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** While recovery rate among COVID-19 patients is around 77.3% in Bangladesh, some patients may have symptoms that can last for weeks or even months after recovering from a serious illness. The objective of this study was to assess the HRQOL of female after recovery from COVID-19. HRQOL of female is one of the most important public health issues to improve health status in child bearing age.

**Methods:** A cross-sectional study was conducted among 202 female respondents who were diagnosed as COVID-19 positive in NIPSOM lab to find out the factors influencing HRQOL of female at reproductive age. Sampling was done by simple random sampling and data were collected through telephone interview using a semi-structured questionnaire. FACT G scale was used to measure HRQOL. It's a 27-item questionnaire designed to test four HRQOL domains.

**Results:** Mean age of the respondents was 35.12 years. Most of the respondents studied up to Honors level. Maximum respondents lived in nuclear family and the majorities' family member were within 2-5. They lived in Semi-pacca house. Mean monthly family income of the respondents was within 30001 to 50000 Taka. Regarding presence of comorbidity of the respondents, most of the respondents were non-hypertensive (79.7%), non-diabetic (82.7%) and had no history of bronchial asthma (79.02%). Most of the respondents' family members suffered from COVID-19. The duration of the respondents suffering from COVID-19 ranged from 15 days to 3 months, among them only 12.9% had history of hospitalization and 2.5% had history of ICU stay. Total HRQOL score was 66.01. Among domains, mean score in Physical well-being was highest and was lowest in Functional well-being. Comparing means, it was found that the health related quality of life of female aged 15 to 25 years was higher than other groups. Total HRQOL score among respondents had positive association with age group of female ( $p < 0.05$ ). Being in the hospital also affected women's health and quality of life.

**Conclusion:** It is time for researchers to start considering the role HRQOL will play in the near future. The initial step would be to formulate studies to better understand the relationships between the different factors influencing those that have been infected with COVID-19 and those involved in the treatment of these people.

**Key Words:** Health Related Quality of Life; Female; Recovery; COVID-19



## Home Based Work Experience and Performance among Employed Women during COVID-19 Pandemic

H. Jannat<sup>1</sup>, A. Begum<sup>2</sup>

<sup>1</sup>Dr. Hurul Jannat, Student of MPH (Reproductive and Child Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Afroza Begum, Supervisor and Ex-Head, Department of Maternal and Child Health, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The COVID-19 pandemic provides the impetus for working from home. In this study, home based work experience and performance were assessed among employed women who worked from home during the pandemic in Dhaka city.

**Methods:** A cross-sectional study was conducted among women employees of different occupations such as IT professionals, teachers, bankers, production & trade and management & administration in Dhaka city in 2020. Employed women (n=118) were interviewed on a semi-structured questionnaire containing information on job satisfaction, work arrangement satisfaction and performance level. Job satisfaction was measured on the Minnesota Satisfaction Questionnaire. Work arrangement satisfaction and self-reported performance were measured by two separate subscales containing five items each. The association of various socio-demographic characteristics on the attitude towards job satisfaction and performance was also identified. The data were then analyzed using descriptive statistics, Chi-square tests, t-test, one-way ANOVA and correlation test through the Statistical Package for Social Sciences (SPSS) version 26.

**Results:** Based on the analysis, the majority of the women employees (51.7%) reported a higher degree of satisfaction on the scale; 61.9% were highly satisfied with their work arrangements at home and 66.9% reported a higher level of performance. The findings suggested that job satisfaction was associated with the number of children, the number of family members, total working experience and work arrangements ( $p=0.028$ ,  $p=0.032$ ,  $p=0.033$ ,  $p=0.009$ ,  $p=0.000$  respectively). Other socio-demographic variables were not associated with job satisfaction. Performance was strongly associated with the higher educational qualification of the respondents ( $p=0.000$ ) but no statistically significant association was found with other socio-demographic variables. Moreover, a statistically very significant association was found between job satisfaction and performance ( $p=0.000$ ). So work from home resulted in higher satisfaction in both job and work arrangement and thereby employees performed satisfactorily.

**Conclusion:** Further studies should be conducted with other domains of job satisfaction and performance related to home based work.

**Key Words:** Home Based Work; Experience; Performance; Employed Women; COVID-19; Pandemic



## Physical Health Problems and Academic Performance among Adolescents attended Online Classes during COVID-19 Pandemic

S.N.H. Purni<sup>1</sup>, F. Khanam<sup>2</sup>

<sup>1</sup>Dr. Sharif Nur Hafiza Purni, Student of MPH (Reproductive and Child Health) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Fahmida Khanam, Supervisor and Associate Professor (Virology), Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** The unpredicted situation of COVID-19 pandemic has caused the closure of schools worldwide and has focused the transition of online learning. The aim of the study was to determine physical health problems including digital eye strain and musculoskeletal pain and academic performance among adolescents attended online classes.

**Methods:** This descriptive type of cross-sectional study was conducted among 382 respondents of class VII to X in one Government and three private schools in Mymensingh district. Data were collected conveniently by a pretested semi structured self-administrated questionnaire. The symptoms of DES, its severity and its frequency were measured with the Computer Vision Syndrome Questionnaire. Data were analyzed by SPSS-25 version.

**Results:** Among 382 respondents, 44.5% were between 16-18 years, 54.19% were male, 73.3% were in class 10, duration of online class more than 1 hour was attended by 63.35%, most common device used was smartphone (61.7%), the most common DES symptoms were burning 51.3%, watering 51% and headache 76%. The percentage of DES in this study was 53%, 43% affected with mild DES and 10% with moderate DES. In multivariate logistic regression analysis, age >14 years ( $p=0.008$ ), female ( $p=0.00$ ), above class VIII ( $p=0.00$ ) and duration of device use more than or equal 4 hours during lockdown ( $p=0.02$ ) were independent risk factors for DES among adolescents. The common types of pain were in neck 54.2%, back 46.6% and shoulder 37.7%. Neck pain was highest among respondents aged 16-18 years ( $p=0.00$ ) and among respondents whose duration of online class >1 hour ( $p=0.027$ ). About 49.3% using no back support ( $p=0.003$ ) suffered from neck pain. Back pain was highest among respondents aged 16-18 years ( $p=0.00$ ), 62.5% respondents who took part in class in lying posture suffered from back pain ( $p=0.16$ ). Shoulder pain was highest among respondents aged 16-18 years ( $p=0.026$ ), 42.9% female suffered from shoulder pain ( $p=0.04$ ) and it was associated with lying posture ( $p=0.002$ ). About 55% adolescents' academic performance and mean marks increased after COVID-19 examination. Mean marks were not associated with DES ( $p=0.982$ ) and musculoskeletal pain ( $p=0.093$ ).

**Conclusion:** Majority of adolescents in this study had DES which was associated with duration of digital device. Musculoskeletal pain which had higher frequency in neck, back and shoulder region and was associated with duration of class. Online learning had a positive impact on the academic performance. Special attention is required to correct the above health problems, may be by school health program and so on.

**Key Words:** Physical Health Problems; Academic Performance; Adolescents; Online Classes; COVID-19; Pandemic



## **Pregnancy Outcomes and Related Factors in Selected Tertiary Hospitals in Sylhet City during COVID-19 Pandemic**

N. Biswas<sup>1</sup>, S. Dastider<sup>2</sup>

<sup>1</sup>*Dr. Nipa Biswas, Student of MPH (Reproductive and Child Health) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka-1212.*

<sup>2</sup>*Dr. Sathi Dastider, Supervisor, Associate Professor (Reproductive and Child Health) and Head, Department of Population Dynamics, NIPSOM, Mohakhali, Dhaka-1212.*

### **ABSTRACT**

**Background:** Coronavirus disease 2019 (COVID-19) is an emerging disease with a rapid increase in prevalence rates and deaths. Pregnant women and infant are particularly susceptible to COVID-19, because the physiological changes of pregnancy involve cardiorespiratory and immune systems, which may result in an altered response to SARS-CoV-2 infection in pregnancy. The purpose of this study was to find out the pregnancy outcomes and related factors in selected tertiary hospitals in Sylhet city during COVID-19 pandemic.

**Methods:** This descriptive cross-sectional study was conducted among 301 early postnatal mothers and their new-born babies in Sylhet M.A.G Osmani Medical College and Hospital and Sylhet Women's Medical College and Hospital in Sylhet city of Bangladesh. Study period was one year. Before proceeding for data collection, informed written consent was taken. Data were collected by face to face interview with the help of a semi-structured questionnaire.

**Results:** In this study, mean age of the mothers was 24.8 ( $\pm 4.47$ ). Most of the mothers lived in rural area (80.1%), maximum (45.5%) mothers completed secondary level education and 98.3% mothers were housewife. Maximum (85%) respondents' gestational age was within 37-40 weeks and 93.4% mothers received antenatal checkups. Here, 70.8% mothers terminated by caesarean section and adverse maternal outcomes after delivery was found among 12.3%, postpartum hemorrhage and convulsion was found among 37.8% and 32.4% respectively and only 2.7% respondents were hypertensive. There was association between antenatal checkups and maternal outcomes after delivery ( $p=0.000$ ). COVID positive mothers were 8 (2.7%) and 50% mothers' gestational age was  $<37$  weeks and common symptoms were fever (75%), body ache (50%) and cough (50%). Among 301 infants, adverse outcomes were found among 20.6% and low birth weight and birth asphyxia was found among 66.1% and 50% respectively. Here, newborn babies' outcomes were significantly associated with total number of antenatal check-up ( $p=0.005$ ).

**Conclusion:** Mothers and their babies are susceptible and at risk during this COVID-19 pandemic that can make adverse birth outcomes including mortality. So, Periodic antenatal check-up and intra-partum services should be provided in a way that is safe and proper referral system should be ensured.

**Key Words:** Pregnancy Outcomes; Factors; Tertiary Hospitals; Sylhet City; COVID-19; Pandemic



## Satisfaction of Pregnant Women regarding Antenatal Care at the Selected Upazila Health Complexes during COVID-19 Pandemic

D.D.D. Parag<sup>1</sup>, R. Ara<sup>2</sup>

<sup>1</sup>Dr. Deb Dulal Dey Parag, Student of MPH (Reproductive and Child Health) for the session 2019-2020, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Prof. Dr. Rowshan Ara, Supervisor and Ex-Head, Department of Population Dynamics, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Antenatal care services are one of the most important public health issues to improve maternal and fetal health status in Bangladesh. Client satisfaction is a basic for further advancement of quality of antenatal care and to provide uniform care service for pregnant women. The aim of this study was to assess the level of satisfaction of pregnant women regarding antenatal care at the selected upazila health complexes during COVID-19 pandemic.

**Methods:** A cross-sectional study was conducted among 163 conveniently selected pregnant women at 3 upazila health complexes of Kishorganj district. Data were collected by face to face interview through a semi-structured questionnaire.

**Results:** Mean age ( $\pm$ SD) of the respondents was 23.38 ( $\pm$ 3.7) years and 82.2% of them were housewives. About 40.5% respondents studied up to SSC level. 83.4% respondents had 2 or less children and lived in nuclear family. Mean $\pm$ SD monthly family income of the respondents were 9349.69 $\pm$ 6306.51 taka. The distance of Upazila Health Complex and households of 46% respondents were between 1-5 kilometers. Among them, 97.5% of the respondents were satisfied about service time. About 81% respondents got all medicine for treatment and opinion about behavior of healthcare provider and cleanliness of Upazila Health Complex was satisfactory among 89% and 76.7% respondents respectively. The mean $\pm$ SD waiting time was 20 $\pm$ 13.87 minutes. About 95% respondents were aware about pregnancy registration and medical checkup during pregnancy. About 69.3% respondents were aware about availability of normal vaginal delivery. Respondents who were well aware about antenatal care services showed 2.5 times more likely to be satisfied than the respondents who were poorly aware about ANC services [OR=2.546; 95% CI (1.33-4.84)]. Respondents who got all medicine for treatment showed 4.32 times more likely to be satisfied about antenatal care than those who did not get all medicine for treatment. Respondents who had to wait less than 15 minutes showed 1.43 times more likely to be satisfied than the respondents who had to wait more than 15 minutes ( $p<0.05$ ). Opening status of the Upazila Health Complexes also showed positive association with satisfaction of pregnant women ( $p<0.05$ ). More than half of the respondents (59.5%) were satisfied about antenatal care service provided from Upazila Health Complexes during COVID-19 pandemic.

**Conclusion:** Planners and policymakers should take necessary actions to overcome the barriers of satisfaction of pregnant women regarding antenatal care at Upazilla Health Complexes during this pandemic.

**Key Words:** Satisfaction; Pregnant Women; Antenatal Care; Upazila Health Complexes; COVID-19; Pandemic





## Screen Time and Psychosocial Wellbeing among Urban Adolescents during COVID-19 Pandemic

M. Aktar<sup>1</sup>, N. Farhana<sup>2</sup>

<sup>1</sup>*Dr. Marjiya Aktar, Student of MPH (Reproductive and Child Health) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.*

<sup>2</sup>*Dr. Nasreen Farhana, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.*

### ABSTRACT

**Introduction:** Excessive screen time by adolescents may result in psychosocial problems like hyperactivity, conduct problem, emotional symptoms and peer problems. This study was aimed to explore the screen time and psychosocial wellbeing among urban adolescents during COVID-19 pandemic.

**Methods:** An analytical type of cross-sectional study was conducted among 346 adolescents from 1<sup>st</sup> January to 31<sup>st</sup> December 2021. They were selected purposively from four schools in Dhaka city. A pretested semi-structured questionnaire was developed for collecting data within three weeks by face-to-face interview.

**Results:** In this study, among 346 respondents, age ranged from 13 to 16 years (mean 15.31±SD 1.1), 47.7% respondents were from class 10 and boys were predominant (59%). Highest 84.7% respondents belonged to nuclear family and 54% had one sibling. All type of screen using respondents were 40.2%, among which 54.9% used broadband connection. Highest 59.5% were using internet connected screen for 1 to 4 years. Internet using cost increased in 58.55% respondents and daily screen usage for 3-5 hours was highest in 61.8% respondents during COVID-19 pandemic. Excessive screen use other than school time was found in 80.1% respondents and 60.65% of them used excessive screen daily for 1 to 3 hours. The effect of screen use during the COVID-19 pandemic was found in 46.2% respondents. Psychosocial wellbeing assessed by SDQ scale. According to SDQ score psychosocial wellbeing abnormality found in 39%. According to impact score, abnormal respondents were 36.3%. Present study found an association between SDQ total score and siblings' number ( $p<0.05$ ), where highest (38.7%) abnormality found who had one sibling. Daily screen time (in hour) was associated with SDQ total score ( $p<0.05$ ), abnormality found in 45.2% who used screen more than 3 hours. Daily screen time (in hour) was associated with conduct problem and hyperactivity ( $p<0.05$ ), where conduct abnormality found among 53.5% and hyperactivity among 8.5%. Association between the effect of excessive screen use and SDQ total score was found ( $p<0.05$ ), where abnormal SDQ score was found in 64.5% who had effect of screen overuse.

**Conclusion:** Visualization of the study can take competent steps by guardians, teachers and policy makers to reduce screen time in adolescents by setting limitation in device usage.

**Key Words:** Screen Time; Psychosocial Wellbeing; Urban; Adolescents; COVID-19; Pandemic



## Utilization of Postnatal Care Services among Urban Mothers during COVID-19

Q.F. Hossain<sup>1</sup>, N. Farhana<sup>2</sup>

<sup>1</sup>Dr. Quazi Farahnaz Hossain, Student of MPH (Reproductive and Child Health) for the session 2020-2021, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

<sup>2</sup>Dr. Nasreen Farhana, Supervisor and Associate Professor, Department of Microbiology and Mycology, NIPSOM, Mohakhali, Dhaka-1212.

### ABSTRACT

**Background:** Postnatal care (PNC) services enable health professionals to identify post-delivery problems including potential complications for the mother with the baby and to provide treatments promptly. Utilization of maternal health care services amidst the COVID-19 pandemic has been taking place due to strong efforts to manage it. Therefore, the present study was aimed to assess the utilization of postnatal care services among urban mothers during COVID-19.

**Methods:** A cross-sectional study was conducted among 279 urban mothers who had a baby under the age of one year. The convenient sampling technique was used to select the study participants from three hospitals of Dhaka district named Dhaka Medical College and Hospital (DMCH), Shaheed Suhrawardy Medical College and Hospital (ShSMCH) and MCHTI which is situated at Azimpur. After taking written informed consent, data were collected through face to face interview using a semi structured questionnaire. Data analysis was done using Statistical Package for Social Sciences (SPSS) version 25 for descriptive analysis (frequency, percentage, mean, range and standard deviation) while inferential analysis was performed to identify the presence of associations between the independent and outcome variables by Chi-square test and p value of <0.05 was used to declare statistical significance.

**Results:** In this study among 279 participants, age ranged from 16 to 48 years (mean age 24.99±SD5.43) and highest 60.2% of respondents were in 15-25 years age group. Among them, 43.4% of mothers received services from a health care facility for their child (58.7%) and due to complication to herself (30.6%). After 6 weeks of delivery about 60% of the respondents took PNC services. Of them, about 15% of mothers had experienced the delivery at home. The reasons for not taking PNC services (56.6%) were, not aware of PNC services (45%), lack of transport facility (22%), distance of the facility (18.4%) and treatment cost (14.6%). In this study, significant associations were found between PNC service receiving status and educational status of mothers and husbands ( $p<0.001$ ), monthly family income of respondents ( $p<0.001$ ) and having nearby healthcare facilities ( $p<0.001$ ).

**Conclusion:** PNC specific education services may enhance utilization of postnatal care.

**Key Words:** Utilization; Postnatal Care Services; Urban; Mothers; COVID-19



## Prime Minister Gold Medal Award for NIPSOM Students



**Umar Rashid Munir**  
MPhil (PSM), Session: 2012-14  
PM Award 2015



**Khursheda Akhter**  
MPhil (PSM), Session: 2014-16  
PM Award 2017



**Md. Shakhwat H Chowdhury**  
MPhil (PSM), Session: 2015-17  
PM Award 2018



**Md. Sydur Rahman**  
MPhil (PSM), Session: 2016-18  
PM Award 2019

## Induction





## CHAPTER-3

# **NIPSOM:** Frontline Organization to Combat **COVID-19**

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## **NIPSOM: Frontline Organization to Combat COVID-19**

### *At a glance*

#### **1. Conducting lab tests to detect COVID-19:**

**1.1** NIPSOM took unprecedented action to address the public health threat posed by this new coronavirus. The rRT-PCR test was started at its laboratory immediately after the outbreak of the COVID-19 epidemic in the country. Though rolling to the uncertainty, various levels of health workers like doctors, medical technologists and others worked relentlessly throughout the pandemic risking their lives in direct contact with the patients of COVID-19. Apart from conducting rRT-PCR, other essential tests for COVID-19 treatment e.g. CRP, D-dimer, and S. Ferritin were also performed in the lab.

**1.2** NIPSOM was the first in the country to publish the test results of rRT-PCR in a completely digitalized format. The sample donors first received both positive and negative results through an SMS sent to their mobile numbers from NIPSOM. At the same time, they could view and print the test report by just inserting their mobile number on the website of NIPSOM.

**1.3** Samples from Dhaka city and different districts outside Dhaka (such as Munshiganj, Sylhet, Moulvibazar, and Sunamganj) were tested.

**1.4** rRT-PCR tests were also done for the travelers going abroad. In South Korea and a few other countries, only the reports of NIPSOM were acceptable.

**1.5** Many government and private level senior officials (VVIP/VIP), diplomats, sports personalities of national team, artists and other celebrities preferred NIPSOM to do rRT-PCR tests.

**1.6** NIPSOM also conducted this test for the participants in national events such as Mujib Borsho, the Golden Jubilee of the independence of Bangladesh and the Padma bridge inauguration.

#### **2. Research work on COVID 19**

NIPSOM faculties and students have completed more than 100 research projects on COVID-19-related areas. Among them, several research papers have been published in internationally renowned scientific journals (such as The Lancet, Plos One, Cambridge University press etc). The results of these studies were also published widely in print and electronic media.

#### **3. Teaching on COVID-19**

The faculties were prompt to acquire knowledge and scientific expertise about the deadly disease. They enlightened their students accordingly. As a result, they have been making important contributions to the prevention and control of epidemics in public and private sectors. Its staff has collaborated across faculties and worked with Ministry of Health & Family Welfare and related stakeholders to take necessary public health response to the pandemic.

#### **4. Training on COVID-19**

Doctors, Nurses, and Paramedics were given diverse forms of training on COVID-19. For example: infection prevention & control, behavioral communication etc. It had organized seminars and workshops also.

#### **5. Production & dissemination of IEC contents on COVID-19**

Various IEC contents (theme songs & documentaries) were developed to create public awareness.



## Combating Against COVID-19

**China-Bangladesh Medical Expert Dialogue (Online) on Fighting Against COVID-19**  
**Venue: Room No. 301 (2nd Floor), NIPSOM; Date: 8 April 2020**



## Sample Collection of COVID-19





## CHAPTER-4

**NIPSOM** *in brief*

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## Introduction

National Institute of Preventive & Social Medicine (NIPSOM) is the apex institution of the country in the field of public health. It is the largest producer of public health workforce in Bangladesh and one of the oldest post graduate institutes in the South-East Asia region. The proposal for establishing National Institute of Preventive & Social Medicine (NIPSOM) was passed by in Executive Committee of National Economic Council (ECNEC) in 1974 by Father of the Nation Bangabandhu Sheikh Mujibur Rahman. The formal courses of NIPSOM were started in 1978. The institute was established to develop public health workforce at the post graduate level and to conduct research and provide advisory and consultancy services to support Primary Health Care Services. The institute is headed by the Director and consists of 13 departments. The institute conducts one MPhil (PSM) course and nine MPH programs in different disciplines of public health. The MPhil course is running in conventional system and MPH programs are running in credit-based semester system. NIPSOM also conducts short training courses, workshops, seminars and conferences. For examinations and award of degrees, the institute is affiliated to the Bangabandhu Sheikh Mujib Medical University and functions through the Dean of the Faculty of Preventive and Social Medicine (PSM) of the university. The syllabus and course curriculum are approved by the Bangladesh Medical and Dental Council (BMDC).

## Vision

To become a center of excellence in academic, research and resource body at international level and lend society towards good health through prevention.

## Mission

To achieve and sustain excellence in every area of its teaching, training, research and consultancy, maintaining and developing its historical position as a world-class institute and enriching the international, national and regional communities through the fruits of its expertise.

## Objectives

- Education - To conduct academic course/programs leading to post-graduate degrees (MPhil & MPH) in different disciplines of public health
- Training - To organize in-service and continuing education/training programs for different categories of health personnel
- Research - To promote and undertake Health System Research as an instrument of public health practice and development
- Consultancy - To provide technical advisory/consultancy services in the field of public health.

## Departments (13) of NIPSOM

- Biostatistics
- Community Medicine
- Entomology
- Epidemiology
- Health Education
- Maternal and Child Health
- Microbiology and Mycology
- Nutrition and Biochemistry
- Non-Communicable Diseases
- Occupational and Environmental Health
- Parasitology
- Population Dynamics
- Public Health and Hospital Administration





## Courses Offered

<b>MPhil (PSM)</b>	: Master of Philosophy in Preventive and Social Medicine
<b>MPH (CM)</b>	: Master of Public Health in Community Medicine
<b>MPH (CN)</b>	: Master of Public Health in Community Nutrition
<b>MPH (Epid)</b>	: Master of Public Health in Epidemiology
<b>MPH (HM)</b>	: Master of Public Health in Hospital Management
<b>MPH (HP&amp;HE)</b>	: Master of Public Health in Health Promotion and Health Education
<b>MPH (HSMP)</b>	: Master of Public Health in Health Service Management and Policy
<b>MPH (OEH)</b>	: Master of Public Health in Occupational and Environmental Health
<b>MPH (RCH)</b>	: Master of Public Health in Reproductive and Child Health
<b>MPH (NCD)</b>	: Master of Public Health in Non-Communicable Diseases

## Duration of Courses

MPhil (PSM)	24 months
MPH	24 months

## Admission Criteria

### Academic

- MBBS or equivalent degree (recognized by BMDC) plus one year intern training is the basic requirement for all MPH programs. MPH (CN), MPH (HP&HE), MPH (HSMP) and MPH (HM) and MPH (RCH) programs also allow Bachelor of Dental Surgery (BDS) or equivalent degree (recognized by BMDC). Bachelor degree in Physiotherapy, Nursing, Health Technology and Ayurvedic/Unani/Homeopathy from any recognized institutes are also allowed in MPH (CN), MPH (HP&HE), MPH (HSMP) and MPH (HM) programs.
- MPH is the basic requirement for MPhil (PSM) course and also allow MBBS having three publications with must having one first authorship.

### Service experience

Working experience in government and/or non-government health facilities of minimum one year is required for admission in addition to one year intern training.

### Allotted seats

Course/Program Name	No. of Seats	Course/Program Name	No. of Seats
MPhil (PSM)	09	MPH (HP&HE)	26
MPH (CM)	20	MPH (HSMP)	20
MPH (CN)	06	MPH (OEH)	20
MPH (Epid)	22	MPH (RCH)	26
MPH (HM)	26	MPH (NCD)	20

\*Fifty percent (50%) seats are for government candidates and 50% for others.

## NIPSOM Journal JOPSOM

The institute publishes a biannual journal titled "Journal of Preventive and Social Medicine (JOPSOM)". The journal publishes articles on current health issues of the country, research findings, study reports and topics on educational and scientific interests in the field of public health.





## CHAPTER-5

# Development of NIPSOM 2016-2022

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## **Development of NIPSOM: In a Nutshell 2016-2022**

### **Physical developments**

1. Renovation and modernization of -
  - i. Auditorium
  - ii. NIPSOM Lab (*Infrastructure & logistics*)
  - iii. Conference Room (#301)
  - iv. Main Training Room (#420)
  - v. Computer lab cum IT Centre
  - vi. Entrance gate with Bangabandhu mural
  - vii. Kitchen and dining hall of student hostel
  - viii. Teachers' lounge
  - ix. Muslim prayer room (Male & Female Unit)
  - x. All the classrooms equipped with new furniture and digital support
  - xi. All the rooms of faculties
  - xii. Room of Hostel Super
  - xiii. Students' Common Room
2. Refurbishment (cot, bed, blanket, table, chair etc.) of rooms of student hostel
3. Reconstruction of internet connectivity (broadband & Wi-Fi)
4. Establishment of Database Server
5. Establishment of Sub-Station for 300 KVA generator
6. Establishment of gymnasium
7. Beautification of gardens, securing green environment
8. Ensuring cleanliness of all the structures
9. Reconstruction of boundary wall of NIPSOM Staff Quarter
10. Eviction of sub-let tenants from the NIPSOM Quarter
11. Dismantling illegal structures inside the campus and quarters.



## Intellectual developments

1. Conduction of national survey/research
  - i. STEPS (NCD Risk Factor Survey)
  - ii. Need assessment of public health professionals
  - iii. Healthy lifestyle survey
  - iv. HIV among TB patients survey
  - v. Food borne diseases survey
2. Collaborative activities with different kinds of development partners like WHO, UNICEF, FAO, World Bank, SEAPHEIN, ADPC, CDC, Bloomberg Philanthropies etc
3. Updating the curriculum of all the programs (9) of MPH
4. Reactivation of NIPSOM Website and achieving government domain (*nipsom.gov.bd*)
5. Regular publication of JOPSOM
6. Post creation: 2 times
7. Opening of new departments (NCD+9 more): Academic activities of Department of **Non-Communicable Diseases (NCD)** started.  
9 (nine) more departments approved by Ministry of Health & Family Welfare, Ministry of Public Administration & Ministry of Finance. Awaiting the approval of NICAR. The departments are:
  - i. **Neurodevelopmental Disorder**
  - ii. **Public Health Informatics**
  - iii. **Public Health Economics & Health Care Financing**
  - iv. **Biomedical Engineering**
  - v. **Hospital Management**
  - vi. **Public Health Dentistry**
  - vii. **Social Medicine**
  - viii. **Public Health Emergency**
  - ix. **Behavioral Science**
8. Recruitment (2nd & 3rd Class)- 2 times. Promotion- several times
9. Library: Addition of latest edition of books on public health and Muktijuddhya
10. Activation of laboratory investigation: COVID-19 lab support
11. Conducting seminars, workshops, trainings
12. Attending seminar, workshops, training at home and abroad
13. Restoration of healthy environment at Student Hostel (Eviction of illegal occupants)
14. Expansion and modernization of NIPSOM: Draft DPP





## Inauguration of Renovated Auditorium by Mr. Zahid Maleque MP, Minister, MoH&FW



## Inauguration of Revitalized NIPSOM Lab



## Inauguration of Main Training Venue by Mr. Zahid Maleque MP, Minister, MoH&FW



## Inauguration of Renovated Meeting Room (301)



## Launching of Official Website *nipsom.gov.bd*





## Opening of Non Communicable Disease (NCD) Department



## Dimensions of Activities



Inauguration of gymnasium



A campus with a view



Supervision of development works



Inspection of students hostel kitchen





## Stepwise approach for surveillance of non-communicable diseases (STEPS Survey 2018)





## Competency Based Training in Nutrition (CBT) supported by UNICEF and NNS



## Collaboration with Bloomberg Philanthropies and CDC on Scientific Communication



## Collaboration with Asian Disaster Preparedness Centre (ADPC)



## Chikungunya Mass Awareness Campaign





## Dimensions of Activities



Chief Guest Mr. Mohammad Nasim MP, Minister, MoH&FW addresses the audience



Collaboration with USAID



Meeting with WHO Representative in Bangladesh



Letter of Agreement signing with FAO

## Observation of Days



