



Belal Hossain

Postdoctoral Scholar, Immunology and Rheumatology

Bio

BIO

I have a strong statistical background in analyzing and developing methods with observational and pragmatic clinical trial data. I also have experience in epidemiological and public health research, focusing on infectious and communicable diseases, non-communicable diseases, adult health, and maternal & child health research. My current research interests include biostatistics and epidemiology, with a particular focus on causal inference, machine learning, causal inference with machine learning, risk prediction modelling, causal mediation analysis, and complex surveys.

STANFORD ADVISORS

- Jennifer Rabbitts, Postdoctoral Research Mentor
- Lola Falasinnu, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **Global, regional and national burden of ischemic heart disease attributable to suboptimal diet, 1990-2023: a Global Burden of Disease study** *NATURE MEDICINE*
Lee, S., Lee, H., Son, Y., Shin, J., Aalruz, H., Abate, Y., Abbafati, C., Abbas, N., Abbaspour, E., Abbastabar, H., ElHafeez, S., Abdi, P., Abdisa, et al
2026; 32 (4): 1454+
- **Global, regional, and national burden of chronic respiratory diseases and impact of the COVID-19 pandemic, 1990-2023: a Global Burden of Disease study** *NATURE MEDICINE*
Oh, J., Kim, S., Yim, Y., Kim, M., Hay, S. I., Shin, J., Yon, D., Jabbar, A. A. J., Aalruz, H., Abbasian, M., Abd Al Magied, A. H. A., Abd ElHafeez, S., Abdelkader, et al
2026; 32 (1): 197-223
- **Global, Regional, and National Burden of Cardiovascular Diseases and Risk Factors in 204 Countries and Territories, 1990-2023** *JACC- JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY*
Stark, B. A., DeCleene, N. K., Desai, E. C., Hsu, J. M., Johnson, C. O., Lara-Castor, L., LeGrand, K. E., Bhoomadevi, A., Aalipour, M., Aalruz, H., Abafita, B. J., Abaraogu, U. O., Abavisani, et al
2025; 86 (22): 2167-2243
- **Global age-sex-specific all-cause mortality and life expectancy estimates for 204 countries and territories and 660 subnational locations, 1950-2023: a demographic analysis for the Global Burden of Disease Study 2023** *LANCET*
Schumacher, A. E., Zheng, P., Barber, R. M., Bhoomadevi, A., Aalipour, M., Aalruz, H., Ababneh, H. S., Abaraogu, U. O., Abbafati, C., Abbas, N., Abbasifard, M., Abbaspour, F., Abd Al Magied, et al
2025; 406 (10513): 1731-1810
- **Global burden of 292 causes of death in 204 countries and territories and 660 subnational locations, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023** *LANCET*

Naghavi, M., Kyu, H., Bhoomadevi, A., Aalipour, M., Aalruz, H., Ababneh, H. S., Abafita, B. J., Abaraogu, U. O., Abbafati, C., Abbasi, M., Abbaspour, F., Abbastabar, H., Abd Al Magied, et al
2025; 406 (10513): 1811-1872

- **Burden of 375 diseases and injuries, risk-attributable burden of 88 risk factors, and healthy life expectancy in 204 countries and territories, including 660 subnational locations, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023** *LANCET*

Hay, S. I., Ong, K., Santomauro, D. F., Bhoomadevi, A., Aalipour, M., Aalruz, H., Ababneh, H. S., Abaraogu, U. O., Abate, B., Abbafati, C., Abbas, N., Abbasifard, M., Abbasi-Kangevari, et al
2025; 406 (10513): 1873-1922

- **Comparative effectiveness of take-home dosing schedules for opioid agonist treatment in British Columbia, Canada: a target trial emulation protocol using a population-based observational study** *BMJ OPEN*

Kurz, M., Guerra-Alejos, B., Hossain, M., Min, J., Yan, R., Bruneau, J., Catherine, N. L. A., Greenland, S., Gustafson, P., Hedden, L., Karim, E., Mccandless, L., Nolan, et al
2025; 15 (10): e098317

- **Comparative effectiveness of alternative initial doses of opioid agonist treatment for individuals with opioid use disorder: a protocol for a retrospective population-based study using target trial emulation in British Columbia, Canada** *BMJ OPEN*

Yan, R., Hossain, M., Min, J., Kurz, M., Smith, K., Piske, M., Seaman, S., Bach, P., Karim, E., Platt, R. W., Siebert, U., Socias, M., Xie, et al
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- **LASSO-Based Survival Prediction Modeling with Multiply Imputed Data: A Case Study in Tuberculosis Mortality Prediction** *AMERICAN STATISTICIAN*

Hossain, M., Sadatsafavi, M., Johnston, J. C., Wong, H., Cook, V. J., Karim, M.
2026; 80 (1): 77-88

- **Comparative effectiveness of missed dose protocols of opioid agonist treatment in British Columbia, Canada: protocol for a population-based target trial emulation** *BMJ OPEN*

Mondol, M., Min, J., Kurz, M., Zanette, M., Hossain, M., Bach, P., Gustafson, P., Platt, R. W., Seaman, S., Socias, M., Nosyk, B., Karim, M.
2025; 15 (7): e098318

- **High-Dimensional Disease Risk Score for Dealing With Residual Confounding Bias in Estimating Treatment Effects With a Survival Outcome** *PHARMACOEPIDEMIOLOGY AND DRUG SAFETY*

Hossain, M., Wong, H., Sadatsafavi, M., Cook, V. J., Johnston, J. C., Karim, M.
2025; 34 (7): e70172

- **Simultaneously Dealing With Immortal Time Bias and Residual Confounding: A Case Study of a High-Dimensional Propensity Score Approach With a Nested Case-Control Framework in Multiple Sclerosis Research** *PHARMACOEPIDEMIOLOGY AND DRUG SAFETY*

Hossain, M., Ng, H., Zhu, F., Tremlett, H., Karim, M.
2025; 34 (7): e70174

- **Enhancing risk prediction base on health administrative data using high-dimensional prediction model** *JOURNAL OF CLINICAL EPIDEMIOLOGY*

Hossain, M., Sadatsafavi, M., Wong, H., Cook, V. J., Johnston, J. C., Karim, M.
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- **Examining the Role of Race/Ethnicity and Sex in Modifying the Association Between Early Smoking Initiation and Mortality: A 20-Year NHANES Analysis** *AJPM FOCUS*

Karim, M., Hossain, M., Zheng, C.
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- **Comparative effectiveness of methadone take-home dose initiation in British Columbia, Canada: protocol for a population-based retrospective cohort study using target trial guidelines** *BMJ OPEN*

Hossain, M., Guerra-Alejos, B., Kurz, M., Min, J., Karim, M., Seaman, S., Bach, P., Platt, R. W., Gustafson, P., Bruneau, J., Mccandless, L., Socias, M., Nosyk, et al
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- **Evaluating the Role of High-Dimensional Proxy Data in Confounding Adjustment in Multiple Sclerosis Research: A Case Study** *PHARMACOEPIDEMIOLOGY AND DRUG SAFETY*

Karim, M., Hossain, M., Ng, H., Zhu, F., Frank, H. A., Tremlett, H.
2025; 34 (2): e70112

- **Problem of pain in the USA: evaluating the generalisability of high-impact chronic pain models over time using National Health Interview Survey (NHIS) data** *BMJ PUBLIC HEALTH*
Falasinnu, T., Hossain, M., Karim, M., Weber II, K., Mackey, S.
2025; 3 (1)
- **Problem of pain in the USA: evaluating the generalisability of high-impact chronic pain models over time using National Health Interview Survey (NHIS) data.** *BMJ public health*
Falasinnu, T., Hossain, M. B., Karim, M. E., Weber, K. A., Mackey, S.
2025; 3 (1)
- **Benefits of Repeated Matched-Cohort and Nested Case-Control Analyses with Time-dependent Exposure in Observational Studies** *STATISTICS IN BIOSCIENCES*
Hossain, M., Wong, H., Sadatsafavi, M., Johnston, J. C., Cook, V. J., Karim, M.
2025; 17 (3): 709-737
- **Global, regional, and national burden of disorders affecting the nervous system, 1990-2021: a systematic analysis for the Global Burden of Disease Study 2021** *LANCET NEUROLOGY*
Steinmetz, J. D., Seeher, K., Schiess, N., Nichols, E., Cao, B., Servili, C., Cavallera, V., Cousin, E., Hagins, H., Moberg, M. E., Mehlman, M. L., Abate, Y., Abbas, et al
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- **Global, regional, and national age-specific progress towards the 2020 milestones of the WHO End TB Strategy: a systematic analysis for the Global Burden of Disease Study 2021.** *The Lancet. Infectious diseases*
2024
- **Global age-sex-specific mortality, life expectancy, and population estimates in 204 countries and territories and 811 subnational locations, 1950-2021, and the impact of the COVID-19 pandemic: a comprehensive demographic analysis for the Global Burden of Disease Study 2021.** *Lancet (London, England)*
2024
- **Role of latent tuberculosis infection on elevated risk of cardiovascular disease: a population-based cohort study of immigrants in British Columbia, Canada, 1985-2019** *EPIDEMIOLOGY & INFECTION*
Hossain, M., Johnston, J. C., Cook, V. J., Sadatsafavi, M., Wong, H., Romanowski, K., Karim, M.
2023; 151: e68
- **The Problem of Pain in the United States: A Population-Based Characterization of Biopsychosocial Correlates of High Impact Chronic Pain using the National Health Interview Survey.** *The journal of pain*
Falasinnu, T., Hossain, M. B., Weber, K. A., Helmick, C. G., Karim, M. E., Mackey, S.
2023
- **Prevalence and Associated Factors with Ideal Cardiovascular Health Metrics in Bangladesh: Analysis of the Nationally Representative STEPS 2018 Survey** *EPIDEMIOLOGIA*
Gupta, R., Tamanna, R., Hashan, M., Akonde, M., Haider, S., Chakraborty, P., Hossain, M.
2022; 3 (4): 533-543
- **A multilevel assessment of the influence of education on women's uptake of institutional delivery services during childbirth in Bangladesh.** *Midwifery*
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- **Infectious aetiologies of neonatal illness in south Asia classified using WHO definitions: a primary analysis of the ANISA study.** *The Lancet. Global health*
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2022; 10 (9): e1289-e1297
- **Key considerations for choosing a statistical method to deal with incomplete treatment adherence in pragmatic trials** *PHARMACEUTICAL STATISTICS*
Hossain, M., Karim, M.
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- **The association between rheumatoid arthritis and cardiovascular disease among adults in the United States during 1999-2018, and age-related effect modification in relative and absolute scales** *ANNALS OF EPIDEMIOLOGY*
Hossain, M., Kopec, J. A., Atiquzzaman, M., Karim, M.
2022; 71: 23-30
- **Residential area greenness and hypertension: a national assessment on urban adults in Bangladesh** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL HEALTH RESEARCH*
Khan, J., Biswas, R., Hossain, M., Archie, R.
2023; 33 (8): 796-808
- **Analysis approaches to address treatment nonadherence in pragmatic trials with point-treatment settings: a simulation study** *BMC MEDICAL RESEARCH METHODOLOGY*
Hossain, M., Mosquera, L., Karim, M.
2022; 22 (1): 46
- **Household drinking water <i>E. coli</i> contamination and its associated risk with childhood diarrhea in Bangladesh** *ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH*
Khan, J., Hossain, M., Chakraborty, P., Mistry, S.
2022; 29 (21): 32180-32189
- **Trends in Complementary Feeding Indicators and Intake from Specific Food Groups among Children Aged 6-23 Months in Bangladesh** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH*
Mistry, S., Hossain, M., Irfan, N., Saha, M., Saberlin, S., Shamim, A., Arora, A.
2022; 19 (1)
- **Prevalence and associated factors of metabolic syndrome among Bangladeshi adults: Evidence from a nation-wide survey** *DIABETES EPIDEMIOLOGY AND MANAGEMENT*
Das Gupta, R., Tamanna, R., Akonde, M., Biswas, T., Chakraborty, P., Hossain, M.
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- **Exploring Factors Associated with Women's Willingness to Provide Digital Fingerprints in Accessing Healthcare Services: A Cross-Sectional Study in Urban Slums of Bangladesh** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH*
Mistry, S., Akter, F., Hossain, M., Huda, M., Irfan, N., Yadav, U., Storisteanu, D. M. L., Arora, A.
2022; 19 (1)
- **Difficulties faced by older Rohingya (forcibly displaced Myanmar nationals) adults in accessing medical services amid the COVID-19 pandemic in Bangladesh** *BMJ GLOBAL HEALTH*
Mistry, S., Ali, A., Yadav, U., Huda, M., Ghimire, S., Bestman, A., Hossain, M., Reza, S., Qasim, R., Harris, M. F.
2021; 6 (12)
- **Association between Menstrual Hygiene Management and School Performance among the School-Going Girls in Rural Bangladesh** *ADOLESCENTS*
Ahmed, M., Yunus, F., Hossain, M., Sarker, K., Khan, S.
2021; 1 (3): 335-347
- **Older adults with non-communicable chronic conditions and their health care access amid COVID-19 pandemic in Bangladesh: Findings from a cross-sectional study** *PLOS ONE*
Mistry, S., Ali, A., Yadav, U., Ghimire, S., Hossain, M., Das Shuvo, S., Saha, M., Sarwar, S., Nirob, M., Sekaran, V., Harris, M. F.
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- **Household cooking fuels associated with elevated blood pressure among adult women: a national-wide assessment in Bangladesh** *ENVIRONMENTAL SCIENCE AND POLLUTION RESEARCH*
Khan, J., Hossain, M., Gupta, R.
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- **Assessment of non-communicable disease related lifestyle risk factors among adult population in Bangladesh** *JOURNAL OF BIOSOCIAL SCIENCE*
Hossain, M., Parvez, M., Islam, M., Evans, H., Mistry, S.
2022; 54 (4): 651-671
- **Prevalence and associated factors of hypertension among South African adults: findings from the Demographic and Health Survey 2016** *JOURNAL OF PUBLIC HEALTH-HEIDELBERG*

- Das Gupta, R., Talukder, A., Hossain, M., Akonde, M., Al Kibria, G.
2023; 31 (6): 967-977
- **Residential district multi-hazard risk is associated with childhood undernutrition: evidence from Bangladesh** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL HEALTH RESEARCH*
Hossain, M., Khan, J., Parvez, M.
2022; 32 (9): 2005-2016
 - **Association of household wealth and education level with hypertension and diabetes among adults in Bangladesh: a propensity score-based analysis** *TROPICAL MEDICINE & INTERNATIONAL HEALTH*
Gupta, R., Chakraborty, P., Hossain, M.
2021; 26 (9): 1047-1056
 - **Association between childhood overweight/obesity and urbanization in developing countries: evidence from Bangladesh** *JOURNAL OF PUBLIC HEALTH-HEIDELBERG*
Hossain, M., Khan, J., Adhikary, A., Anwar, A., Raheem, E., Siddiquee, M. H., Hossain, M.
2022; 30 (12): 2819-2828
 - **Exploring depressive symptoms and its associates among Bangladeshi older adults amid COVID-19 pandemic: findings from a cross-sectional study** *SOCIAL PSYCHIATRY AND PSYCHIATRIC EPIDEMIOLOGY*
Mistry, S., Ali, A., Hossain, M., Yadav, U., Ghimire, S., Rahman, M., Irfan, N., Huque, R.
2021; 56 (8): 1487-1497
 - **Misconceptions about COVID-19 among older Rohingya (forcefully displaced Myanmar nationals) adults in Bangladesh: findings from a cross-sectional study** *BMJ OPEN*
Mistry, S., Ali, A., Yadav, U., Ghimire, S., Hossain, M., Saha, M., Reza, S., Bakshi, P., Bhuiyan, A. H., Harris, M.
2021; 11 (5): e050427
 - **Factors associated with mobile phone usage to access maternal and child healthcare among women of urban slums in Dhaka, Bangladesh: a cross-sectional study** *BMJ OPEN*
Mistry, S., Akter, F., Yadav, U., Hossain, M., Sichel, A., Labrique, A. B., Storisteanu, D. M. L.
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 - **Role of hypertension in the association of overweight and obesity with diabetes among adults in Bangladesh: a population-based, cross-sectional nationally representative survey** *BMJ OPEN*
Hossain, M., Khan, J., Gupta, R.
2021; 11 (7): e050493
 - **Community-level environmental characteristics predictive of childhood stunting in Bangladesh-a study based on the repeated cross-sectional surveys** *INTERNATIONAL JOURNAL OF ENVIRONMENTAL HEALTH RESEARCH*
Khan, J., Hossain, M., Awan, N.
2022; 32 (3): 473-486
 - **Association between Household Livestock Ownership and Childhood Stunting in Bangladesh - A Spatial Analysis** *JOURNAL OF TROPICAL PEDIATRICS*
Hossain, M., Khan, J.
2020; 66 (3): 248-256
 - **Probabilistic estimation of seismic parameters for Bangladesh** *ARABIAN JOURNAL OF GEOSCIENCES*
Hossain, B., Hossain, S.
2020; 13 (6)
 - **Prevalence and Risk Factors of Cardiovascular Diseases among Bangladeshi Adults: Findings from a Cross-sectional Study** *JOURNAL OF EPIDEMIOLOGY AND GLOBAL HEALTH*
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 - **Maternal nutrition counselling is associated with reduced stunting prevalence and improved feeding practices in early childhood: a post-program comparison study** *NUTRITION JOURNAL*
Mistry, S., Hossain, M., Arora, A.
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- **Trends and determinants of perinatal mortality in Bangladesh** *PLOS ONE*
Hossain, M., Mistry, S., Mohsin, M., Khan, M.
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- **Individual-, maternal- and household-level factors associated with stunting among children aged 0-23 months in Bangladesh** *PUBLIC HEALTH NUTRITION*
Mistry, S., Hossain, M., Khanam, F., Akter, F., Parvez, M., Yunus, F., Afsana, K., Rahman, M.
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- **Exploring the gap between coverage, access, and utilization of long-lasting insecticide-treated nets (LLINs) among the households of malaria endemic districts in Bangladesh** *MALARIA JOURNAL*
Khanam, F., Hossain, M., Chowdhury, T., Rahman, M., Kabir, M., Naher, S., Islam, M., Rahman, M.
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- **The association between daily 500 mg calcium supplementation and lower pregnancy-induced hypertension risk in Bangladesh** *BMC PREGNANCY AND CHILDBIRTH*
Khanam, F., Hossain, B., Mistry, S., Mitra, D. K., Raza, W., Rifat, M., Afsana, K., Rahman, M.
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- **Role of parental education in reduction of prevalence of childhood undernutrition in Bangladesh** *PUBLIC HEALTH NUTRITION*
Hossain, M., Khan, M.
2018; 21 (10): 1845-1854
- **Identifying factors influencing contraceptive use in Bangladesh: evidence from BDHS 2014 data** *BMC PUBLIC HEALTH*
Hossain, M. B., Khan, M. R., Ababneh, F., Shaw, J. H.
2018; 18: 192