Dr. Sharayu Sitaram Mhatre, Ph.D.
Scientific Officer E & Officer-in-Charge, Division of Molecular Epidemiology and Population Genomics Centre for Cancer Epidemiology (CCE), Kharghar, India
Email: mhatresharayu@gmail.com | **Phone:** +91 98209 58946

Biography:

Dr. Sharayu S. Mhatre is a molecular epidemiologist with expertise in genetic and population-based cancer research in India. She earned her Ph.D. in Epidemiology from the Homi Bhabha National Institute in 2016 and holds an M.Sc. and B.Sc. in Biotechnology from Ramniranjan Jhunjhunwala College, University of Mumbai.

Dr. Mhatre leads research on genetic susceptibility, environmental exposures, and lifestyle factors influencing cancer risk, with extensive experience in cohort and case–control study design, genome-wide association studies (GWAS), next-generation sequencing, candidate gene analyses, and epidemiological data analysis. She plays a key role in establishing and strengthening molecular epidemiology and genomics infrastructure at the Centre for Cancer Epidemiology (CCE).

Her research integrates genomic and epidemiological data to inform population-specific cancer prevention strategies and translational research. Dr. Mhatre has contributed to large-scale studies on gallbladder, breast, oral, and lung cancers and continues to advance precision cancer epidemiology in India.

Research Interests:

Dr. Sharayu S. Mhatre's research focus on the molecular epidemiology of high-burden cancers in Indian populations, with a particular focus on head and neck, gallbladder, breast, and lung cancers. Her work explores the complex interplay between genetic susceptibility and environmental exposures, integrating genome-wide association studies (GWAS), next-generation sequencing, and polygenic risk scores with detailed assessments of lifestyle and environmental determinants such as tobacco use, alcohol consumption, diet, and heavy metal exposure.

In addition to cancer research, Dr. Mhatre is actively investigating gallstone disease in India, given its strong epidemiological and biological link to gallbladder cancer. She is also involved

in non-communicable disease research through leadership roles in large-scale longitudinal initiatives such as the Indian Study of Healthy Ageing (ISHA), which aims to elucidate the environmental and genetic causes of cancer and other chronic diseases across diverse Indian populations.

Through her interdisciplinary approach, Dr. Mhatre seeks to bridge molecular genetics and public health by identifying biomarkers for early detection and developing population-specific risk stratification models. Her overarching goal is to translate genomic and epidemiological evidence into actionable cancer prevention and control strategies tailored to the Indian context.

Current Research Projects:

Dr. Sharayu S. Mhatre leads and collaborates on multiple ongoing studies investigating genetic susceptibility, lifestyle, and environmental factors in cancer. She is the Principal Investigator (PI) for a genome-wide association study (GWAS) exploring genetic susceptibility in buccal mucosa cancer, and a candidate gene-based case-control study evaluating genetic risk for oropharynx cancer in Indian populations. She also leads studies on the prevalence of gallstone disease in regions with high and low gallbladder cancer incidence, and on obesity and non-communicable diseases in 10,000 adults from the Indian Study of Healthy Ageing (ISHA) cohort. Additionally, she is conducting research on depressive disorders in the ISHA cohort and plans a study on population DNA methylation variation to understand disease discordance across ancestries. As Co-Principal Investigator (Co-PI), development of breast cancer risk prediction models using lifestyle and polygenic risk scores, and biomarker phenotypes of air pollution in relation to cancer risk. She is also Co-Investigator (Co-I) on a multicentre case-control study examining lifestyle and genetic risk factors for gallbladder cancer. These projects are supported by national and international agencies, including the Department of Health Research (Govt. of India), ASCO, NCI, CTSU UK (University of Oxford), Medical Research Council UK, and the National Cancer Grid.

Past Research Contributions:

Dr. Sharayu S. Mhatre has played a key role in several major cancer epidemiology studies in India. She contributed to the gallbladder cancer case-control study, overseeing study design, questionnaire development, GWAS, and Helicobacter pylori serology data. She was also involved in the breast cancer case-control study, managing genotyping, questionnaire

administration, and candidate gene data analysis. In the lung cancer case-control study focusing on non-smokers, she led data collection and questionnaire-based analyses. Additionally, Dr. Mhatre contributed to the design, development, and training aspects of the Barshi cohort study, supporting large-scale epidemiological research in Indian populations.

Awards & Fellowships:

Dr. Sharayu S. Mhatre has received several prestigious awards and fellowships in recognition of her contributions to cancer epidemiology. She participated in the EEPE Residential Summer Course on Epidemiology in Florence, Italy (2010), was awarded the UICC Technology Transfer Fellowship at Mount Sinai School of Medicine, New York (2010–2011), and completed a Short-Term Training in Molecular Epidemiology at the U.S. National Cancer Institute (NCI) in 2015.

Teaching & Mentorship:

Dr. Mhatre serves as a lecturer for MPH and MSc Clinical Research programs and provides mentorship by supervising MPH student dissertations, guiding the next generation of epidemiologists.

Technical Skills:

She is proficient in statistical and bioinformatics tools, including STATA, R, and PLINK for large-scale GWAS, which she applies in genotyping, GWAS, and candidate gene data analysis. She also uses Illumina's DRAGEN/BaseSpace for cloud-based data management and rapid secondary analysis of next generation sequencing.

Selected Publications:

1. Moirangthem R, Patil A, Chitkara G, Kar S, Smith GD, Dikshit R, Mhatre S. Association between digit ratio (2D:4D) and right-left difference in 2D:4D ratio with breast cancer risk: multicentre case-control study from India. Sci Rep. 2025 Dec 31. doi: 10.1038/s41598-025-33919-2. Epub ahead of print. PMID: 41476102.

2. George GS, Patil A, Moirangthem R, Doibale PN, Manjrekar A, Golapkar SV, Panse N, Krishnatreya M, Mishra A, Singh A, Rumgay H, Hosseini B, Chaturvedi A, Rajaraman P, Olsson A, Soerjomataram I, Chaturvedi P, Dikshit R, Mhatre S. Association of alcohol and different types of alcoholic beverages on the risk of buccal mucosa cancer in Indian men: a multicentre case-control study. BMJ Glob Health. 2025 Dec 23;10(12):e017392. doi: 10.1136/bmjgh-2024-017392. PMID: 41436185.
3. Mhatre S, Dutta D, Iyer A, Golapkar SV, Mishra A, Krishnatreya M, George GS, Doibale PN, Dun Y, Wang Z, Jahagirdar O, Chaturvedi P, Rajaraman P, Wang CP, Chaturvedi A, Kar S, Dikshit R, Chatterjee N. A genome-wide association study of buccal mucosa cancer in India and multi-ancestry meta-analysis discovers risk loci and gene-environment interactions. EBioMedicine. 2025 Dec;122:106042. doi: 10.1016/j.ebiom.2025.106042. Epub 2025 Nov 29. PMID: 41318233.
4. George GS, Dikshit R, Chaturvedi A, Chaturvedi P, Mhatre S. Reply to: Beyond the Numbers: Inflammation as the Missing Link in Decayed, Missing, Filled Teeth-Based Buccal Mucosa Cancer Risk Models. JCO Glob Oncol. 2025 Oct;11:e2500487. doi: 10.1200/GO-25-00487. Epub 2025 Oct 22. PMID: 41124627.
5. George GS, Singh A, Moirangthem R, Patil A, Pullat GB, Sagare S, Krishnatreya M, Mishra A, Sonwane R, Hosseini B, Chaturvedi A, Chaturvedi P, Dikshit R, Mhatre S. Association of Decayed, Missing, Filled Teeth Score With the Risk for Buccal Mucosa Cancer, Stratified on Tobacco and Alcohol Use: A Multicenter Case-Control Study From India. JCO Glob Oncol. 2025 Jul;11:e2500119. doi: 10.1200/GO-25-00119. Epub 2025 Jul 23. PMID: 40700664.
6. Piñeros M, Vignat J, Colombet M, Laversanne M, Ferreccio C, Heise K, Mhatre S, Koshiol J, Bray F. Global variations in gallbladder cancer incidence: What do recorded data and national estimates tell us? Int J Cancer. 2025 Apr 1;156(7):1358-1368. doi: 10.1002/ijc.35232. Epub 2024 Nov 24. PMID: 39580808; PMCID: PMC12351455.
7. Moirangthem R, Hosseini B, Patil A, George GS, Manjrekar A, Doibale P, Golapkar SV, Panse N, Krishnatreya M, Mishra A, Singh A, Chaturvedi A, Chaturvedi P, Dikshit R, Olsson A, Mhatre S. Occupations and the risk of buccal mucosa cancer in Indian men: A multi-centre case-control study. Cancer Epidemiol. 2024 Oct;92:102644. doi: 10.1016/j.canep.2024.102644. Epub 2024 Aug 16. PMID: 39153274.
8. Mhatre SS, Bragg F, Panse N, Judge PK, Manjrekar A, Burrett JA, Patil S, Davey Smith G, Kotkar L, Relton CL, Doibale P, Gadhave B, Chaturvedi P, Sherliker P, Jha P,

Lewington S, Dikshit R. Cohort Profile: Indian Study of Healthy Ageing (ISHA-Barshi). Int J Epidemiol. 2024 Jun 12;53(4):dyae079. doi: 10.1093/ije/dyae079. PMID: 38879791; PMCID: PMC11180225.

9. Perdomo S, Abedi-Ardekani B, de Carvalho AC, Ferreiro-Iglesias A, Gaborieau V, Cattiaux T, Renard H, Chopard P, Carreira C, Spanu A, Nikmanesh A, Cardoso Penha RC, Antwi SO, Ashton-Prolla P, Canova C, Chitapanarux T, Cox R, Curado MP, de Oliveira JC, Dzamalala C, Fabianova E, Ferri L, Fitzgerald R, Foretova L, Gallinger S, Goldstein AM, Holcatova I, Huertas A, Janout V, Jarmalaite S, Kaneva R, Kowalski LP, Kulis T, Lagiou P, Lissowska J, Malekzadeh R, Mates D, McCorrmack V, Menya D, Mhatre S, Mmbaga BT, de Moricz A, Nyirády P, Ognjanovic M, Papadopoulou K, Polesel J, Purdue MP, Rascu S, Rebolho Batista LM, Reis RM, Ribeiro Pinto LF, Rodríguez-Urrego PA, Sangkhathat S, Sangrajrang S, Shibata T, Stakhovsky E, Świątkowska B, Vaccaro C, Vasconcelos de Podesta JR, Vasudev NS, Vilensky M, Yeung J, Zaridze D, Zendehdel K, Scelo G, Chanudet E, Wang J, Fitzgerald S, Latimer C, Moody S, Humphreys L, Alexandrov LB, Stratton MR, Brennan P. The Mutographs biorepository: A unique genomic resource to study cancer around the world. Cell Genom. 2024 Mar 13;4(3):100500. doi: 10.1016/j.xgen.2024.100500. Epub 2024 Feb 6. PMID: 38325367; PMCID: PMC10943582.
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11. Gholap D, Dikshit R, Chaturvedi P, Chaturvedi AK, Manjrekar A, Mhatre S. Exclusive use of different types of tobacco products, exposure to secondhand tobacco smoke and risk of subtypes of head and neck cancer among Indian males. Int J Cancer. 2023 Feb 1;152(3):374-383. doi: 10.1002/ijc.34258. Epub 2022 Sep 8. PMID: 36054453.
12. Gholap D, Mhatre S, Chaturvedi P, Nair S, Gheit T, Tommasino M, Dikshit R. Prevalence of human papillomavirus types in head and neck cancer sub-sites in the Indian population. Ecancermedicalscience. 2022 Feb 18;16:1358. doi: 10.3332/ecancer.2022.1358. PMID: 35510141; PMCID: PMC9023304.
13. Singh AG, Singhavi H, Sharin F, Lakdawala M, Mhatre S, Deodhar J, Chaturvedi P, Dikshit R. Cross-Sectional and Longitudinal Mental Health Status Prevailing among

COVID-19 Patients in Mumbai, India. Indian J Community Med. 2022 Jan-Mar;47(1):55-60. doi: 10.4103/ijcm.ijcm_928_21. Epub 2022 Mar 16. PMID: 35368483; PMCID: PMC8971876.

14. Mhatre S, Lacey B, Sherliker P, Chatterjee N, Rajaraman P, Goel M, Patkar S, Ostwal V, Patil P, Shrikhande SV, Chitkara G, Badwe R, Lewington S, Dikshit R. Reproductive factors and gall-bladder cancer, and the effect of common genetic variants on these associations: a case-control study in India. Int J Epidemiol. 2022 Jun 13;51(3):789-798. doi: 10.1093/ije/dyab197. PMID: 34550362; PMCID: PMC9189936.
15. de Souza R, Mhatre S, Qayyumi B, Chitkara G, Madke T, Joshi M, Bharmal R, Asgaonkar DS, Lakhani P, Gupta S, Chaturvedi P, Dikshit R, Badwe R. Clinical course and outcome of patients with COVID-19 in Mumbai City: an observational study. BMJ Open. 2021 May 6;11(5):e042943. doi: 10.1136/bmjopen-2020-042943. PMID: 33958335; PMCID: PMC8103559.
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24. Dikshit RP, Mathur G, Mhatre S, Yeole BB. Epidemiological review of gastric cancer in India. Indian J Med Paediatr Oncol. 2011 Jan;32(1):3-11. doi: 10.4103/0971-5851.81883. PMID: 21731209; PMCID: PMC3124986.