ISSN 1007-9327 (print)
ISSN 2219-2840 (online)

World Journal of *Gastroenterology*

Weekly Volume 32 Number 39 October 21, 2026

Published by Baishideng Publishing Group Inc

World Journal of

Gastroenterology

Editorial Board

2026-2029

Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
https://www.wjgnet.com

The *World Journal of Gastroenterology* Editorial Board Members are composed of 352 distinguished experts active in the relevant field, distributed in 46 countries/regions, including Italy (66), Japan (54), China (29), United States (29), South Korea (16), Spain (15), Australia (13), Greece (12), Brazil (11), Germany (7), India (7), Romania (7), Taiwan (7), Türkiye (7), United Kingdom (7), Russia (5), Hungary (5), Mexico (4), New Zealand (3), Poland (3), Canada (3), Austria (3), Belgium (3), Croatia (3), Egypt (3), Thailand (3), Sweden (3), Pakistan (2), Argentina (2), France (2), Israel (2), Netherlands (2), Moldova (1), Morocco (1), Jordan (1), Kazakhstan (1), Lebanon (1), Portugal (1), Norway (1), Singapore (1), Slovenia (1), Ireland (1), Albania (1), Estonia (1), United Arab Emirates (1), and Trinidad and Tobago (1).

Editor-in-Chief

Andrzej S Tarnawski, MD, PhD, Professor, (Email: atarnawski@yahoo.com) Department of Gastroenterology Research, University of California Irvine and The Veterans Administration Long Beach Healthcare System, Long Beach, CA 90822, United States

Associate Editor

Antonio Facciorusso, MD, PhD, Full Professor, Director, Gastroenterology Unit, Department of Experimental Medicine, Università del Salento, Lecce 73100, Italy

Jian-Gao Fan, MD, PhD, Professor, Department of Gastroenterology, Shanghai Key Laboratory of Children's Digestion and Nutrition, Xinhua Hospital, Shanghai Jiaotong University School of Medicine, Shanghai 200092, China

Maria Gazouli, PhD, Professor, Basice Medical Sciences, Athens Medical School, Athens 11527, Greece

Zhen-Dong Jin, MD, PhD, Director, Professor, Department of Gastroenterology, Changhai Hospital, Second Military Medical University, Shanghai 200433, China

Tatsuo Kanda, MD, PhD, Professor, Division of Gastroenterology and Hepatology, Uonuma Institute of Community Medicine, Niigata University Medical and Dental Hospital, Minamiuonuma 949-7302, Japan; Department of General Medicine, Uonuma Kikan Hospital, Minamiuonuma 949-7302, Japan

Peter Laszlo Lakatos, MD, PhD, Professor, Division of Gastroenteorlogy, McGill University Health Center, Montreal, QC H3G 1A4, Canada

Hou-Bao Liu, PhD, Chief Physician, Professor, Department of General Surgery, Biliary Tract Disease Center of Zhongshan Hospital Zhongshan Hospital, Fudan University, Shanghai 200032, China

Nahum Mendez-Sanchez, MD, PhD, Professor, Liver Research Unit, Medica Sur Clinic and Foundation, Mexico City 14050, Mexico

Takeshi Suda, MD, PhD, Professor, Department of Gastroenterology and Hepatology, Uonuma Institute of Community Medicine, Niigata University Medical and Dental Hospital, Minami Uonuma, Niigata 949-7302, Japan

Naohisa Yoshida, MD, PhD, Assistant Professor, Department of Molecular Gastroenterology and Hepatology, Kyoto Prefectural University of Medicine, Kyoto 602-8566, Japan

Xian-Jun Yu, MD, PhD, Professor, Department of Oncology, Shanghai Medical College, Fudan University, Shanghai 200032, China

Editorial Board

Zaigham Abbas, Professor, Hepatogastroenterology and Liver Transplantation, Dr. Ziauddin University Hospital, Karachi, Sindh 75600, Pakistan

Sherief Abd-Elsalam, MD, PhD, Associate Professor, Tropical Medicine and Infectious Diseases Department, Faculty of Medicine, Tanta University, Tanta 35127, Egypt

Shahab Abid, MD, PhD, Professor, Section of Gastroenterology at Department of Medicine, Aga Khan University, Karachi 74800, Pakistan

Yasushi Adachi, MD, PhD, Professor, Department of Gastroenterology, Sapporo Medical University, Sapporo 060-8543, Japan

Samir Ahboucha, PhD, Associate Professor, Faculty of Khouribga, Sultan Moulay Slimane University, Khouribga, Settat 25000, Morocco

Yoshio Aizawa, MD, PhD, Professor, Division of Gastroenterology and Hepatology, Department of Internal Medicine, The Jikei University Katsushika Medical Center, Katsushika-ku, Tokyo 1258506, Japan

Amedeo Amedei, Full Professor, Department of Clinical and Experimental Medicine, University of Florence, Florence, Tuscany 50135, Italy

Pietro Andreone, MD, Associate Professor, Professor, Dipartimento di Scienze Mediche e Chirurgiche, University of Bologna, Policlinico Sant'Orsola-Malpighi, Bologna 40138, Italy

Francesco Angelico, MD, Associate Professor, Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome 00161, Italy

Vito Annese, MD, PhD, Professor, Department of Gastroenterology, Valiant Clinici, City Walk, Dubai, United Arab Emirates

Bruno Annibale, MD, Professor, Medical-Surgical Department of Clinical Sciences and Translational Medicine, Sapienza University of Rome, Rome 00189, Italy

Minoti V Apte, PhD, Professor, Pancreatic Research Group, South Western Sydney Clinical School, University of New South Wales, Sydney, New South Wales 2050, Australia

Makoto Arai, MD, PhD, Professor, Department of Gastroenterology, Tokyo Women's Medical University Yachiyo Medical Center, Yachiyo 276-8524, Japan

Takaaki Arigami, MD, PhD, Department of Digestive Surgery, Breast and Thyroid Surgery, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima 890-8520, Japan

Naoki Asano, MD, PhD, Professor, Division of Carcinogenesis and Senescence Biology, Tohoku University Graduate School of Medicine, 47-1 Nodayama, Natori 981-1293, Miyagi, Japan

Paolo Aurello, MD, PhD, Assistant Professor, Dipartimento di Scienze Medico-Chirurgiche e di Medicina Traslazionale, University of Rome "La Sapienza", Rome 00189, Italy

Gian Luca Baiocchi, MD, Associate Professor, Department of Clinical and Experimental Sciences, University of Brescia, Brescia 25127, Italy

Yasemin Hatice Balaban, MD, Professor, Department of Gastroenterology, Hacettepe University, Ankara 06100, Türkiye

Giorgos Bamias, MD, PhD, Associate Professor, GI Unit, 3rd Academic Department of Internal Medicine, National and Kapodistrian University of Athens, Sotiria Hospital, Athens 11526, Greece

Yung-Jue Bang, MD, PhD, Professor, Department of Internal Medicine, Seoul National University College of Medicine, Seoul 110-744, South Korea

Donatella Barisani, MD, Associate Professor, School of Medicine and Surgery, University of Milano-Bicocca, Monza 20900, Italy

Michele Barone, MD, PhD, Section of Gastroenterology, Department of Regenerative and Precision Medicine-Jonian Area, University of Bari, Bari 70124, Italy

Gabrio Bassotti, MD, PhD, Associate Professor, Department of Medicine, Gastroenterology and Hepatology Section, University of Perugia Medical School, San Sisto 06156, Italy

Ian Beales, MD, Assistant Professor, Department of Gastroenterology, Norfolk and Norwich University Hospital, Norwich, Norfolk NR4 7UY, United Kingdom

Trond Berg, PhD, Professor, Department of Biosciences, University of Oslo, Oslo N316, Norway

Madhav Bhatia, PhD, Emeritus Professor, Department of Pathology and Molecular Medicine, University of Otago, Christchurch 8140, New Zealand

Josep M Bordas, MD, PhD, Department of Gastroenterology, Hospital Clinic, Barcelona 08022, Spain

Dmitry S Bordin, MD, PhD, Professor, Department of Pancreatic, Biliary and Upper GI Tract Diseases, A.S. Loginov Moscow Clinical Scientific Center, Moscow 111123, Russia

Lisardo Boscá, PhD, Senior Researcher, Department of Metabolism and Immunology, Instituto de Investigaciones Biomédicas Sols-Morreale (Spanish Research Council and Autonomous University of Madrid), Madrid 28029, Spain

Barbara Braden, PhD, Professor, Translational Gastroenterology Unit, Oxford University Hospitals NHS Foundation Trust, Oxford OX3 9DU, United Kingdom

Luis Bujanda, MD, PhD, Professor, Department of Gastroenterology, Biodonostia Health Research Institute, San Sebastian 33490, Spain

Octavio Caba, PhD, Professor, Department of Human Anatomy and Embriology, University of Granada, Granada 18016, Spain

Giuseppe Maurizio Campo, PhD, Professor, Department of Clinical and Experimental Medicine, University of Messina, Messina 98125, Italy

Guray Can, MD, Associate Professor, Department of Gastroenterology, Bolu Abant İzzet Baysal University, Bolu TR-14280, Türkiye

Claudia Cardoso, PhD, Associate Professor, Professor, Department of Internal Medicine, Federal University of Rio de Janeiro - Universidade Federal do Rio de Janeiro, Rio de Janeiro 22750240, Brazil

Andres F Carrion, MD, Assistant Professor, Postdoctoral Fellow, Division of Gastroenterology and Hepatology, University of Miami Miller School of Medicine, Miami, FL 33136, United States

Lucia Carulli, MD, PhD, Associate Professor, Department of Medicine, Endocrinology, Metabolism and Geriatrics, Univerity of Modena and Reggio Emilia, Modena 41124, Italy

Roberto J Carvalho-Filho, MD, PhD, Division of Gastroenterology, Hepatology Section, Federal University of Sao Paulo, Sao Paulo 04023-060, Brazil

Fernando J Castro, MD, Digestive Disease Center, Cleveland Clinic Florida, Weston, FL 33331, United States

Herwig Cerwenka, MD, Professor, Department of Surgery, Medical University of Graz, Graz A-8036, Austria

Soo-Cheon Chae, PhD, Professor, Department of Pathology, School of Medicine, Wonkwang University, Iksan, Chonbuk 570-749, South Korea

Antonios Chatzigeorgiou, MD, PhD, Assistant Professor, Department of Experimental Physiology, Medical School, National and Kapodistrian University of Athens, Athens 11527, Greece

Júlio Maria Fonseca Chebli, MD, PhD, Associate Professor, Professor, Department of Medicine, Universidade Federal de Juiz de Fora, Juiz de Fora, Minas Gerais 36036-247, Brazil

Adam S Cheifetz, MD, Associate Professor, Assistant Professor, Department of Medicine, Beth Israel Deaconess Medical Center, Boston, MA 02215, United States

Isabelle Andrée Chemin, Professor, Department of Hepatocarcinogenesis and Viral Infection, Centre de Recherche en Cancérologie de Lyon Inserm U1052, Lyon 69003, France

Xiaoxin Chen, MD, PhD, Professor, Cancer Research Program, Julius L Chambers Biomedical Biotechnology Research Institute, North Carolina Central University, Durham, NC 27707, United States

Giuseppe Chiarioni, MD, Division of Gastroenterology, University of Verona, Verona 37122, Italy

Hideyuki Chiba, MD, PhD, Department of Gastroenterology, Omori Red Cross Hospital, Tokyo 143-8527, Japan

King-Wah Chiu, MD, Professor, Division of Hepato-Gastroenterology, Department of Internal Medicine, Chang Gung Memorial Hospital-Kaohsiung Medical Center, Chang Gung University College of Medicine, Kaohsiung 83305, Taiwan

Byung-Ho Choe, MD, PhD, Professor, Department of Pediatrics, School of Medicine, Kyungpook National University, Daegu 41404, South Korea

Kenneth Siu-Ho Chok, MD, Associate Professor, Department of Surgery, Queen Mary Hospital, The University of Hong Kong, Hong Kong 999077, China

Grigorios Christodoulidis, MD, PhD, Department of General Surgery, University Hospital of Larissa, Larissa 41110, Greece

Wan-Long Chuang, MD, PhD, Professor, Hepatobiliary Division, Department of Internal Medicine, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung 807, Taiwan

Halina Cichoż-Lach, MD, Professor, Department of Gastroenterology with Endoscopy Unit, Medical Univeristy of Lublin, Lublin 20-954, Poland

Pilar Codoñer-Franch, PhD, Professor, Department of Pediatrics, Dr. Peset University Hospital, Valencia 46017, Spain

Helen G Coleman, PhD, Professor, Centre for Public Health, Queen's University Belfast, Belfast BT12 6BJ, United Kingdom

Sandro Contini, MD, Associate Professor, Department of Surgical Sciences, Faculty of Medicine, University of Parma, Parma 43126, Italy

Elena Corradini, MD, Associate Professor, Department of Medical and Surgical Sciences for Children and Adults, University of Modena and Reggio Emilia, Modena 41124, Italy

Fernando J Corrales, PhD, Professor, Functional Proteomics Laboratory, National Biotechnology Center (CNB-CSIC), Madrid 28049, Spain

Gaetano Corso, MD, PhD, Professor, Dipartimento di Medicina Clinica e Sperimentale, Università di Foggia, Foggia I-71122, Italy

José Cotter, MD, PhD, Professor, Department of Gastroenterology, Hospital da Senhora da Oliveira, Guimarães 4835-044, Portugal

Bo-Ta Cui, MD, Associate Professor, Department of Microbiota Medicine and Medical Center for Digestive Diseases, The Second Affiliated Hospital of Nanjing Medical University, No. 121 Jiangjiayuan, Nanjing 210011, Jiangsu Province, China

Zhi-Jun Dai, MD, PhD, Professor, Department of Breast Cancer, The First Affiliated Hospital, College of Medicine, Zhejiang University, Hangzhou 310003, Zhejiang Province, China

Andrew S Day, MD, Professor, Department of Paediatrics and Child Health, University of Otago Christchurch, Christchurch 8041, New Zealand

Ângelo Zambam de Mattos, MD, PhD, Graduate Program in Medicine: Hepatology, Federal University of Health Sciences of Porto Alegre, Porto Alegre, Rio Grande do Sul 90020-090, Brazil

Paola De Nardi, MD, Associate Professor, Colorectal Surgical Oncology, Department of Abdominal Oncology, Fondazione Giovanni Pascale IRCCS, Naples 34105, Italy

Cláudia P de Oliveira, MD, PhD, Professor, Department of Gastroenterology, Faculdade de Medicina da Universidade de São Paulo, São Paulo 04126000, Brazil

Giovanni Domenico De Palma, MD, Department of Clinical Medicine and Surgery, "Federico II" University of Naples, Naples 80131, Italy

Emilio De Raffele, MD, PhD, Assistant Professor, Dipartimento dell'Apparato Digerente, Policlinico S.Orsola-Malpighi, University of Bologna, Bologna 40138, Italy

Heitor Siffert Pereira de Souza, MD, PhD, Department of Clinical Medicine, School of Medicine, Federal University of Rio de Janeiro, Rio de Janeiro 21941-913, Brazil

Benedicte Yvonne De Winter, MD, PhD, Professor, Faculty of Medicine and Health Sciences, Laboratory of Experimental Medicine and Pediatrics, University of Antwerp, Antwerp 2610, Belgium

Gian Luigi de'Angelis, MD, PhD, Gastroenterology and Endoscopy Unit, University of Parma, University Hospital of Parma, Parma 43126, Italy

Giuliana Decorti, MD, Associate Professor, Department of Medical, Surgical and Health Sciences, University of Trieste, Institute for Maternal and Child Health - IRCCS "Burlo Garofolo", Trieste 34127, Italy

Francesco Di Mario, MD, Department of Medicine and Surgery, University of Parma, Parma 43126, Italy

Zhi Du, PhD, Professor, Department of Hepatobiliary Surgery, Third Central Hospital of Tianjin, Tianjin 300170, China

Dan Lucian Dumitrascu, MD, PhD, Professor, 2nd Medical Department Cluj County Emergency Clinical Hospital Romania, University of Medicine and Pharmacy Iuliu Hatieganu Cluj-Napoca, Cluj-Napoca, Cluj RO 400006, Romania

Nageshwar Reddy Duvvuru, MD, Department of Medical Gastroenterology, Asian Institute of Gastroenterology, Hyderabad, Telangana 500082, India

Cumali Efe, MD, Associate Professor, Department of Gastroenterology, Harran University, Şanlıurfa 06100, Türkiye

Eli D Ehrenpreis, MD, Professor, Department of Medicine, Rosalind Franklin University Medical School, Chicago, IL 60064, United States

Nikolas Eleftheriadis, MD, Euromedica Kyanous Stauros, Thessaloniki 50200, Greece

Gulsum Ozlem Elpek, MD, Professor, Department of Pathology, Akdeniz University Medical School, Dumlupinar Bulvari, Antalya 07070, Türkiye

Mortada H F El-Shabrawi, MD, Professor, Department of Paediatrics, Kasr Alainy School of Medicine, Cairo University, Cairo 11562, Egypt

Hirayuki Enomoto, MD, PhD, Professor, Division of Hepatobiliary and Pancreatic Diseases, Department of Gastroenterology, Hyogo Medical University, Nishinomiya, Hyogo 663-8501, Japan

Atilla Ertan, MD, Professor, Department of Internal Medicine, Division of Gastroenterology, Hepatology and Nutrition Ertan Digestive Disease Center of Excellence, University of Texas Health McGovern Medical School, Houston, TX 77030, United States

Guy D Eslick, PhD, Professor, Centre for Digestive Health, The University of Newcastle, Newcastle, NSW 2300, Australia

Serag M Esmat, MD, Professor, Department of Internal Medicine, Faculty of Medicine, Cairo University, Cairo 11562, Egypt

Massimiliano Fabozzi, MD, PhD, FACS, Department of Oncological Surgery, Arcispedale Santa Maria Nuova - IRCCS, Oncological Centre of Reggio Emilia, Reggio Emilia, Emilia Romagna 42123, Italy

Daniel T Farkas, MD, Associate Professor, Department of Surgery, BronxCare Health System, Bronx, NY 10457, United States

Matteo Fassan, MD, PhD, Department of Medicine, Surgical Pathology Unit, University of Padua, Padua 35121, Italy

Peter Ferenci, MD, Professor, Internal Medicine III, Gastroenterology and Hepatology, Medical University of Vienna, Wien A-1090, Austria

Conrado M Fernandez-Rodriguez, MD, PhD, Associate Professor, Department of Gastroenterology and Hepatology, Hospital Universitario Fundacion Alcorcon, Service of Gastroenterology, Alcorcon, Madrid 28922, Spain

Giovanna Ferraioli, MD, Department of Clinical, Surgical, Diagnostic and Pediatric Sciences, Medical School University of Pavia, Pavia 27100, Italy

Mirella Fraquelli, MD, PhD, Internal Medicine, Fondazione IRCCS Ca' Granda – Ospedale Maggiore Policlinico, Milano 20122, Italy

De-Liang Fu, MD, PhD, Professor, Department of Pancreatic Surgery, Pancreatic Disease Institute, Huashan Hospital, Shanghai 200040, China

Pietro Fusaroli, MD, Associate Professor, Department of Medical and Surgical Sciences, University of Bologna/Hospital of Imola, Bologna 40121, Italy

Alfred Gangl, MD, Professor, Department of Medicine 3, Division of Gastroenterology and Hepatology, Medical University of Vienna, Allgemeines Krankenhaus, Vienna A-1090, Austria

Diego García-Compeán, MD, Professor, Gastroenterology Service and Department of Internal Medicine, Faculty of Medicine, University Hospital "Dr. José E. González", Universidad Autónoma de Nuevo León, Monterrey, Nuevo León 64700, Mexico

Matteo Garcovich, MD, PhD, Internal Medicine, Gastroenterology and Hepatology, Fondazione IRCSS Agostino Gemelli Hospital, Università Cattolica del Sacro Cuore, Rome 00168, Italy

Pankaj Garg, MD, Department of Colorectal Surgery, Garg Fistula Research Institute, Panchkula, Haryana 134113, India

Nikolaus Gassler, MD, Professor, Institute of Pathology, RWTH Aachen University, Braunschweig 38114, Germany

Tom Johannes Gerardus Gevers, MD, Division of Gastroenterology and Hepatology, Department of Internal Medicine, Maastricht University Medical Center, Maastricht, Limburg 6202 AZ, Netherlands

Paola Ghiorzo, PhD, Assistant Professor, Department of Internal Medicine and Medical Specialties, University of Genoa, Genoa 16132, Italy

Luca Vittorio Gianotti, MD, PhD, Professor, School of Medicine and Surgery, University of Milano-Bicocca, Department of Surgery, San Gerardo Hospital, Monza 20900, Italy

Wataru Gonoi, MD, PhD, Assistant Professor, Department of Radiology, Graduate School of Medicine, The University of Tokyo, Tokyo 1138655, Japan

Mark Gorrell, PhD, Professor, Liver Enzymes in Metabolism and Inflammation Program, Centenary Institute and University of Sydney, Sydney, NSW 2006, Australia

Alberto Grassi, MD, PhD, Department of Internal Medicine and Hepatology, Infermi Hospital, Rimini 47921, Italy

Gabriele Grassi, MD, PhD, Associate Professor, Department of Life Sciences, University Hospital of Cattinara, Trieste 34149, Italy

Michal Grąt, MD, PhD, Department of General, Transplant and Liver Surgery, Medical University of Warsaw, Warsaw 02-097, Poland

Antonietta Gerarda Gravina, PhD, MD, Associate Professor, Department of Precision Medicine, Gastroenterology Unit, University of Campania "Luigi Vanvitelli", Naples 80138, Italy

Antonio Grieco, MD, Associate Professor, Liver Transplant Medicine, Fondazione Policlinico Universitario A. Gemelli IRCCS, Università Cattolica del Sacro Cuore, Roma, Institute of Internal Medicine, Rome 00168, Italy

Fabio Grizzi, PhD, Department of Immunology and Inflammation, Humanitas Clinical and Research Hospital, Rozzano 20089, Italy

Samir C Grover, MD, Assistant Professor, Division of Gastroenterology, St. Michael's Hospital, University of Toronto, Toronto, Ontario M5B1W8, Canada

Sushovan Guha, MD, PhD, Professor, Department of Internal Medicine, University of Texas Health Science Center, Houston, TX 77030, United States

Chisato Hamashima, MD, PhD, Professor, Faculty of Medical Tecnology, Teikyo University, Tokyo 1738605, Japan

Ken Haruma, MD, PhD, Professor, Department of Internal Medicine 2, Kawasaki Medical School Kawasaki Hospital, Okayama 701-0192, Japan

Naoki Hashimoto, MD, PhD, Professor, Department of Surgery, Kindai University, Osaka 577-8502, Japan

Goran Hauser, MD, PhD, Associate Professor, Department of Internal Medicine, Division of Gastroenterology, Clinical Hospital Centre, Medical Faculty, Faculty of Health Studies, University of Rijeka, Rijeka 51000, Croatia

Koichi Hayano, MD, PhD, Associate Professor, Department of Frontier Surgery, Chiba University Graduate School of Medicine, Chiba-shi 260-8677, Japan

Paul Henderson, PhD, Child Life and Health, University of Edinburgh, Edinburgh EH16 4TJ, United Kingdom

Harald Peter Hoensch, MD, Professor, Marien Hospital Medical Department, Private Practice in Internal Medicine and Gastroenterology, Darmstadt D-64285, Germany

Gordon Stanley Howarth, PhD, Professor, School of Animal and Veterinary Sciences, University of Adelaide, Roseworthy, South Australia 5371, Australia

Ping-I Hsu, MD, Professor, Division of Gastroenterology and Hepatology, Department of Internal Medicine, Kaohsiung Veterans General Hospital, Kaohsiung 813, Taiwan

Jun-Te Hsu, MD, Professor, Department of Surgery, Chang Gung Memorial Hospital, Taoyuan County and Chang Gung Medicine Colledge, Taoyuan 333, Taiwan

Bing-Sheng Huang, PhD, Associate Professor, Medical AI Lab, School of Biomedical Engineering, Health Science Centre, Shenzhen University, Shenzhen 518000, Guangdong Province, China

Chang-Ming Huang, MD, PhD, Professor, Department of Gastric Surgery, Fujian Medical University Union Hospital, Fuzhou 350001, Fujian Province, China

Jia-Ling Huang, MD, PhD, Assistant Professor, Department of Pathology, Geisinger Medical Center, Geisinger Commonwealth School of Medicine, 100 N Academy Ave, Danville, PA 17822, United States

Calogero Iacono, MD, Associate Professor, Department of Surgical Sciences, Dentistry, Gynecology and Pediatrics, Division of General and Hepatobiliary Surgery, University of Verona, Verona 37134, Italy

Mostafa Ibrahim, MD, Assistant Professor, Department of Gastroenterology, Hepatopancreatology and Digestive Oncology, Erasme Hospital, Brussels B-1070, Belgium

Enzo Ierardi, MD, Associate Professor, Section of Gastroenterology, Department of Emergency and Organ Transplantation, University of Bari, Bari, BA 70124, Italy

Masahiro Iizuka, MD, PhD, Akita Health Care Center, Akita Red Cross Hospital, Akita City, Akita 010-0001, Japan

Yoshihiro Ikura, MD, Professor, Department of Pathology, Takatsuki General Hospital, Takatsuki, Osaka Prefecture 569-1192, Japan

Hiroyuki Imaeda, MD, Professor, Department of Gastroenterology, Saitama Medical University, Iruma-gun, Saitama 350-0495, Japan

Kazuaki Inoue, MD, PhD, Associate Professor, Department of Internal Medicine, Division of Gastroenterology, Showa University Fujigaoka Hospital, Yokohama 227-8501, Japan

Raffaele Iorio, MD, Associate Professor, Department of Translational Medical Science, Section of Pediatrics, University Federico II, Naples 80131, Italy

Paola Iovino, MD, Associate Professor, Department of Medicine, Surgery and Dentistry, Scuola Medica Salernitana, University of Salerno, Baronissi, Salerno 84081, Italy

Shuji Isaji, MD, PhD, Professor, Department of Hepatobiliary Pancreatic and Transplant Surgery, Mie University Graduate School of Medicine, Tsu, Mie 514-8507, Japan

Vasily Isakov, MD, PhD, Professor, Department of Gastroenterology and Hepatology, Federal Research Center of Nutrition, Biotechnology and Food Safety, Moscow 115446, Russia

Toru Ishikawa, MD, Department of Gastroenterology and Hepatology, Saiseikai Niigata Hospital, Niigata 950-1104, Japan

Masaya Iwamuro, MD, PhD, Assistant Professor, Department of Gastroenterology and Hepatology, Okayama University Graduate School of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama 700-8558, Japan

Yoshiaki Iwasaki, MD, PhD, Professor, Health Service Center, Okayama University, Okayama 700-8530, Japan

Khaled Ali Jadallah, MD, Associate Professor, Department of Internal Medicine, King Abdullah University Hospital, Faculty of Medicine, Jordan University of Science and Technology, Irbid 22110, Jordan

Jeong Won Jang, MD, PhD, Associate Professor, Department of Internal Medicine, The Catholic University of Korea, Seoul 06591, South Korea

Kalpesh Jani, MD, Department of Gastrointestinal and Minimal Access Surgery, Vadodara Institute of Gastrointestinal and Obesity Surgery, Vadodara, Gujarat 390011, India

Harindra Jayasekara, MD, PhD, Melbourne School of Population and Global Health, The University of Melbourne, Melbourne, Victoria 3010, Australia

Robert Thomas Jensen, MD, Digestive Diseases Branch, National Institutes of Health, Bethesda, CA 20892, United States

Guang Ji, MD, PhD, Professor, Institute of Digestive Diseases, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai 200032, China

Wei Jiang, MD, PhD, Professor, Department of Gastroenterology, Zhongshan Hospital, Fudan University, Shanghai 200032, China

Miguel Jiménez Pérez, MD, PhD, Assistant Professor, UGC de Aparato Digestivo, Unidad de Hepatología-Trasplante Hepático, Hospital Regional Universitario de Málaga, Málaga 29010, Spain

Young Do Jung, MD, PhD, Professor, Department of Biochemistry, Chonnam National Universtiy Medical School, Jeonnam 58138, South Korea

Satoru Kakizaki, MD, PhD, Assistant Professor, Associate Professor, Department of Internal Medicine, Division of Gastroenterology and Hepatology, Gunma University Graduate School of Medicine, Maebashi 3718511, Japan

Yoshihiro Kamada, MD, PhD, Professor, Department of Advanced Metabolic Hepatology, Graduate School of Medicine, The University of Osaka, Suita 565-0871, Osaka, Japan

Hiroteru Kamimura, MD, PhD, Assistant Professor, Division of Gastroenterology and Hepatology, Niigata University Graduate School of Medical and Dental Sciences, Chuo-ku, Niigata 951-8510, Japan

Georgios Karamanolis, MD, PhD, Associate Professor, Department of Gastroenterology, Medical School, National and Kapodistrian University of Athens, Athens 11527, Greece

Rashmi Kaul, PhD, Professor, Department of Biochemistry and Microbiology, Oklahoma State University-Center for Health Sciences, Tulsa, OK 74107, United States

Kazumichi Kawakubo, MD, PhD, Assistant Professor, Department of Gastroenterology and Hepatology, Faculty of Medicine and Graduate School of Medicine, Hokkaido University, Sapporo 0608638, Japan

Sahil Khanna, MD, Assistant Professor, Division of Gastroenterology and Hepatology, Mayo Clinic, Rochester, MN 55905, United States

In Hee Kim, MD, PhD, Professor, Department of Internal Medicine, Chonbuk National University Hospital, Jeonju, Jeonbuk 561-712, South Korea

Seung Up Kim, MD, PhD, Associate Professor, Department of Internal Medicine, Yonsei University College of Medicine, Seoul 03722, South Korea

Byung Joo Kim, PhD, Professor, School of Korean Medicine, Pusan National University, Yangsan 50612, South Korea

Dong Joon Kim, MD, PhD, Professor, Department of Internal Medicine, Hallym University College of Medicine Institute for Liver and Digestive Diseases, Hallym University, Hallym University Chuncheon Sacred Heart Hospital, Gangwon-do 24253, South Korea

Donghee Kim, MD, PhD, Associate Professor, Division of Gastroenterology and Hepatology, Stanford University School of Medicine, Stanford, CA 94304, United States

Gwang Ha Kim, MD, PhD, Professor, Division of Gastroenterology, Department of Internal Medicine and Biomedical Research Institute, Pusan National University Hospital, Busan 49241, South Korea

Hideaki Kinugasa, MD, PhD, Assistant Professor, Department of Gastroenterology and Hepatology, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama 700-8558, Japan

Yasuhiro Koga, MD, PhD, Professor, Department of Gastroenterology, Tokai University School of Medicine, Isehara, Kanagawa 259-1193, Japan

Bledar Kraja, MD, PhD, Professor, Department of Biomedical Sciences, Physiology Section, Faculty of Medicine, University Hospital Center Mother Teresa, University Clinic of Gastrohepatology, Tirana 1001, Albania

Wolfgang Kreisel, MD, Department of Medicine II, Gastroenterology, Hepatology, Endocrinology, and Infectious Diseases, Faculty of Medicine, Medical Center - University of Freiburg, Freiburg 79106, Germany

Somashekar G Krishna, MD, Professor, FACG, FASGE, AGAF, Division of Gastroenterology, Hepatology, and Nutrition, The Ohio State University Wexner Medical Center, Columbus, OH 43210, United States

Veerapol Kukongviriyapan, PhD, Associate Professor, Department of Pharmacology, Faculty of Medicine, Khon Kaen University, Muang, Khon Kaen 40002, Thailand

Vincenzo La Mura, MD, PhD, Associate Professor, Department of Pathophysiology and Transplantation, University of Milan, Fondazione IRCCS Ca' Granda, Ospedale Maggiore Policlinico-University of Milan, Milan 20122, Italy

Quirino Lai, MD, PhD, Transplant Unit, Sapienza University of Rome, Rome 00161, Italy

Daniela Cornelia Lazăr, PhD, Associate Professor, Department of Internal Medicine I, The University of Medicine and Pharmacy "Victor Babes" Timisoara, Timisoara 300041, Romania

Vijittra Leardkamolkarn, PhD, Professor, Associate Professor, Department of Anatomy, Mahidol University, Bangkok 10400, Thailand

Kyu Taek Lee, MD, PhD, Professor, Department of Gastroenterology, Samsung Medical Center, Sungkyunkwan University School of Medicine, 50 Ilwon-Dong, Seoul 135710, South Korea

Soo-Youn Lee, MD, PhD, Professor, Department of Laboratory Medicine and Genetics, Samsung Medical Center, Sungkyunkwan University School of Medicine, 50 Ilwon-Dong, Gangnam-gu, Seoul 135-710, South Korea

Sung-Chul Lim, PhD, MD, Professor, Department of Pathology, Chosun University Hospital, Gwangju 501-717, South Korea

Alexander Link, MD, PhD, Associate Professor, Professor, Department of Gastroenterology, Hepatology and Infectious Diseases, Otto-von-Guericke University Hospital Magdeburg, Magdeburg 39120, Germany

Zheng-Wen Liu, MD, PhD, Professor, Department of Infectious Diseases, First Affiliated Hospital of Xi'an Jiaotong University, Xi'an 710061, Shaanxi Province, China

Hui-Kang Liu, PhD, Division of Basic Chinese Medicine, National Research Institute of Chinese Medicine, Taipei 112, Taiwan

Ana Lleo, MD, PhD, Associate Professor, Department of Biomedical Science, Humanitas University, Pieve Emanuele, Milan 20090, Italy

Johannes-Matthias Löhr, MD, Professor, Department of Clinical Science, Intervention, and Technology, Karolinska University Hospital, Stockholm 14186, Sweden

Amedeo Lonardo, MD, Professor, Department of Internal Medicine, Azienda Ospedaliero-Universitaria di Modena, Modena 41126, Italy

Xi-Dai Long, MD, PhD, Professor, Department of Pathology, The Affiliated Hospital of Youjiang Medical University for Nationalities, Baise 533000, Guangxi Zhuang Autonomous Region, China

Misha D P Luyer, MD, PhD, Department of Surgery, Catharina Hospital, Eindhoven 5623 EJ, Netherlands

Ming-Zhe Ma, MD, Assistant Professor, Department of Gastric Surgery, Fudan University Shanghai Cancer Center, Shanghai 200032, China

Tomasz Hubert Mach, MD, PhD, Professor, Department of Gastroenterology and Hepatology, Jagiellonian University Medical College, University Hospital, Cracow 31-531, Poland

Govind K Makharia, MD, Professor, Department of Gastroenterology and Human Nutrition, All India Institute of Medical Sciences, New Delhi, Delhi 110029, India

Emanuel K Manesis, MD, Professor, Department of Intenal Medicine, Athens University School of Medicine, Athens 104 34, Greece

Francesco Manguso, MD, PhD, Department of Gastroenterology, Azienda Ospedaliera Di Rilievo Nazionale Antonio Cardarelli, Napoli 80131, Italy

Lorenzo Mannelli, MD, PhD, Assistant Professor, Department of Radiology, SDN, Naples 80143, Italy

Ivana Maric, MD, PhD, Professor, Department of Anatomy, Faculty of Medicine, University of Rijeka, Rijeka 51000, Croatia

José Manuel Martin-Villa, PhD, Professor, Departamento de Inmunología, Oftalmología y ORL, Facultad de Medicina, Universidad Complutense de Madrid, Madrid 28040, Spain

Luca Mastracci, MD, Full Professor, Department of Surgical Sciences and Integrated Diagnostics, University of Genoa and Ospedale Policlinico San Martino, Genoa 16132, Italy

Yoichi Matsuo, MD, PhD, Professor, Department of Gastroenterological Surgery, Nagoya City University Graduate School of Medical Sciences, Nagoya 4678601, Japan

Mark C Mattar, MD, Associate Professor, Department of Gastroenterology, MedStar Georgetown University Hospital, Washington, DC 20007, United States

Julio Mayol, MD, PhD, Professor, Department of Surgery, Universidad Complutense de Madrid Medical School, Hospital Clinico San Carlos, Madrid 28040, Spain

Giuseppe Mazzarella, PhD, Unit of Immunobiology, Laboratory of Immunomorphology, Institute of Food Sciences, National Council Research, Avellino 83100, Italy

Neil Donald Merrett, MD, Professor, Department of Surgery, University of Western Sydney, Penrith, NSW 2571, Australia

Pal Miheller, MD, PhD, Professor, Department of Surgery, Transplantation and Gastroenterology, Semmelweis University, Budapest, Pest H-1088, Hungary

Marco Milone, MD, PhD, Associate Professor, Clinical Medicine and Surgery, "Federico II" University of Naples, Naples 80131, Italy

Eiji Miyoshi, MD, PhD, Professor, Department of Molecular Biochemistry and Clinical Investigation, Osaka University Graduate School of Medicine, Suita, Osaka 565-0871, Japan

Toru Mizuguchi, MD, PhD, Professor, Department of Nursing and Surgical Science, Sapporo Medical University Postgraduate School of Health Science, Sapporo, Hokkaido 0608556, Japan

Dimitrios-Paraskevas Moris, MD, PhD, Department of Surgery, Duke University Medical Center, Durham, NC 27710, United States

Sergey Morozov, PhD, MD, Department of Gastroenterology, Hepatology and Nutrition, Federal Research Center of Nutrition and Biotechnology, 21 Kashirskoye Shosse, Moscow 115446, Russia

David L Morris, MD, FRCS (Ed), Professor, Department of Surgery, University of New South Wales, Sydney, New South Wales 2217, Australia

Naofumi Mukaida, MD, PhD, Professor, Division of Molecular Bioregulation, Cancer Research Institute, Kanazawa University, Kanazawa, Ishikawa 920-1192, Japan

Sandeep Mukherjee, Professor, Department of Internal Medicine, Creighton University Medical Center, Omaha, NE 68124, United States

Atsuhiko Murata, MD, PhD, Chief Physician, Department of Preventive Medicine and Community Health, School of Medicine, University of Occupational and Environmental Health, Fukuoka 8078555, Japan

Hikaru Nagahara, MD, PhD, Professor, Department of Gastroenterology, Saiseikai Kurihashi Hospital, Kuki-shi, Saitama-ken 349-1105, Japan

Masaki Nagaya, MD, PhD, Professor, Meiji University International Institute for Bio-Resource Research, Meiji University, Kawasaki 214-8571, Japan

Hiroshi Nakano, MD, PhD, Associate Professor, Department of Gastroenterological Surgery, St. Marianna University Hospital, Kawasaki, Kanagawa 216-8511, Japan

Shivananda Nayak, PhD, Professor, Department of Preclinical Sciences, Faculty of Medical Sciences, The University of The West Indies, Mount Hope, Trinidad and Tobago

Lucian Negreanu, MD, PhD, Associate Professor, Department of Internal Medicine II, Internal Medicine II Gastroenterology, University Hospital Bucharest, Bucharest 050098, Romania

Matthias Ocker, MD, Professor, Department of Medical, Division of Hematology, Oncology, and Cancer Immunology, Campus Charité Mitte, Charité University Medicine Berlin, Berlin 10117, Germany

Shogo Ohkoshi, MD, PhD, Professor, Department of Internal Medicine, School of Life Dentistry at Niigata, The Nippon Dental University, Niigata 951-8580, Japan

Satoshi Ono, MD, PhD, Department of Gastroenterology and Gastrointestinal Endoscopy, Tokyo Metropolitan Institute for Geriatrics and Gerontology, Tokyo 173-0015, Japan

Shozo Osera, MD, PhD, Chief Physician, Department of Gastroenterology, Saku Central Hospital Advanced Care Center, Saku, Nagano 385-0051, Japan

Motoyuki Otsuka, MD, Assistant Professor, Department of Gastroenterology, Graduate School of Medicine, University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan

Hasan Ozen, MD, Professor, Department of Pediatrics, Division of Gastroenterology, Hepatology and Nutrition, Hacettepe University School of Medicine, Ankara 06100, Türkiye

Salvatore Paiella, MD, Assistant Professor, General and Pancreatic Surgery Unit, Pancreas Institute, University of Verona Hospital Trust, GB Rossi Hospital, Verona 37129, Italy

Arturo Panduro, MD, PhD, Department of Molecular Biology in Medicine, Civil Hospital of Guadalajara Fray Antonio Alcalde/University of Guadalajara, Guadalajara, Jalisco 44280, Mexico

Won Sang Park, MD, PhD, Professor, Department of Pathology, College of Medicine, The Catholic University of Korea, Seoul 137-701, South Korea

Kwan-Kyu Park, MD, PhD, Professor, Department of Pathology, Catholic University of Daegu, Daegu 42472, South Korea

Rinaldo Pellicano, MD, Professor, Gastroenterology Unit, AOU Città della Salute e della Scienza, Turin 10100, Italy

Gianluca Pellino, MD, PhD, Associate Professor, Colorectal Unit, Department of General and Digestive Surgery, Vall d'Hebron University Hospital; General, Digestive, Thoracic Surgery and Liver Transplantation (CIRCATH) Group, Vall d'Hebron Research Institute (VHIR); Universitat Autonoma de Barcelona (UAB), Barcelona 08035, Spain

Angela Peltec, MD, PhD, Associate Professor, Department of Internal Medicine, Discipline of Gastroenterology, State University of Medicine and Pharmacy "Nicolae Testemitanu", Chishinev 2019, Moldova

Enrique Perez-Cuadrado-Robles, MD, PhD, Department of Gastroenterology, Cliniques Universitaires Saint-Luc., Bruxelles 1200, Belgium

Marcos V Perini, MD, PhD, Associate Professor, Department of Surgery, The University of Melbourne, Melbourne, Victoria 3084, Australia

Martina Perse, PhD, Institute of Pathology, Medical Experimental Centre, University of Ljubljana, Faculty of Medicine, Ljubljana 1000, Slovenia

Antonio Picardi, MD, PhD, Associate Professor, Professor, Unit of Internal Medicine and Hepatology, Department of Medicine, University Campus Bio-Medico, Rome 00128, Italy

Federico Piñero, MD, Hepatology and Liver Transplant Unit, Hospital Universitario Austral, Buenos Aires B1629HJ, Argentina

Dimitri Poddighe, MD, PhD, Associate Professor, Department of Medicine, Nazarbayev University School of Medicine, Astana 010000, Kazakhstan

Piero Portincasa, MD, PhD, Department of Biomedical Sciences and Human Oncology, University of Bari Medical School, Bari 70124, Italy

Bogdan Procopet, MD, PhD, Assistant Professor, 3rd Medical Department, "Iuliu Haţieganu" University of Medicine and Pharmacy, Institute for Gastroenterology and Hepatology "Prof. Dr. O. Fodor", Cluj-Napoca 400126, Romania

Chun-Feng Qu, MD, PhD, Professor, Department of Immunology, National Cancer Center/Cancer Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing 100021, China

Zoltán Rakonczay Jr, MD, PhD, Professor, Department of Pathophysiology, University of Szeged, Szeged 6701, Hungary

José M Ramia, MD, PhD, Associate Professor, Department of Surgery, University General Hospital of Alicante, Alicante 03010, Spain

Timo Rath, MD, PhD, Department of Internal Medicine 1, Division of Gastroenterology, Ludwig Demling Endoscopy Center of Excellence, Friedrich-Alexander-University, Erlangen Nuernberg, Erlangen 91054, Germany

Pradip Raychaudhuri, PhD, Professor, Department of Biochemistry and Molecular Genetics (M/C 669), University of Illinois, College of Medicine, 900S. Ashland Ave., Chicago, IL 60607, United States; Jesse Brown VA Medical Center, 820S. Damen Ave., Chicago, IL 60612, United States

Zhi-Gang Ren, MD, PhD, Associate Chief Physician, Chief Physician, Postdoctoral Fellow, Department of Infectious Diseases, State Key Laboratory of Antiviral Drugs, Pingyuan Laboratory, The First Affiliated Hospital of Zhengzhou University, Jianshe East Road, Zhengzhou 450052, Henan Province, China

Vasiliy Ivanovich Reshetnyak, MD, Full Professor, Department of Propaedeutics of Internal Diseases and Gastroenterology, Russian University of Medicine, Moscow 127473, Russian

J Marc Rhoads, MD, Professor, Department of Pediatrics, Division of Gastroenterology, Hepatology, and Nutrition, McGovern Medical School, The University of Texas Health Science Center at Houston, Houston, TX 77030, United States

Luciana Rigoli, MD, Professor, Department of Human Pathology in Adult and Developmental Age "G. Barresi", University of Messina, Messina 98125, Italy

Seungil Ro, PhD, Associate Professor, Department of Physiology and Cell Biology, Reno School of Medicine, University of Nevada, Reno, NV 89557, United States

Ricardo Robles, PhD, MD, Professor, Department of Surgery and Organ Transplantation, Virgen de la Arrixaca University Hospital, Murcia 30120, Spain

Raquel Rocha, PhD, Professor, Department of Sciences of Nutrition, School of Nutrition, Federal University of Bahia, Rua Basílio da Gama, 200-Canela, Salvador, BA 40110-040, Brazil

Francisco Rodriguez-Frias, PhD, Associate Professor, Senior Researcher, Liver Pathology Unit, Biochemistry and Microbiology Departments, Hospital Universitari Vall d'Hebron, Barcelona 08035, Spain

Udo Rolle, MD, PhD, Professor, Department of Pediatric Surgery and Pediatric Urology, University Hospital, Goethe University Frankfurt/M, Frankfurt 60590, Germany

Luca Roncucci, MD, PhD, Associate Professor, Assistant Professor, Department of Diagnostic and Clinical Medicine, and Public Health, University of Modena and Reggio Emilia, Policlinico, Modena 41125, Italy

Joan Rosello-Catafau, PhD, Professor, Department of Experimental Pathology, Institute of Biomedical Research of Barcelona, Barcelona, Catalunya 08036, Spain

Kamran Rostami, MD, PhD, Department of Gastroenterology, MidCentral DHB Palmerston Hospital, Palmerston North 4472, New Zealand

Takao Sakai, MD, PhD, Professor, Department of Diagnostic Pathology, Fujita Health University, Toyoake, Aichi 4701192, Japan

Madhusudana Girija Sanal, PhD, Associate Professor, Department of Molecular and Cellular Medicine, Institute of Liver and Biliary Scieneces, New Delhi, Delhi 110070, India

Ken Sato, MD, PhD, Professor, Department of Healthcare Informatics, Takasaki University of Health and Welfare, 37-1 Nakaorui-machi, Takasaki, Gunma 370-0033, Japan

Hildegard M Schuller, PhD, Professor, Department of Biomedical and Diagnostic Sciences, College of Veterinary Medicine, University of Tennessee Knoxville, Knoxville, TN 37996, United States

Annalucia Serafino, PhD, Senior Researcher, Institute of Translational Pharmacology, National Research Council of Italy, Rome 00133 , Italy

Neal Shahidi, MD, PhD, Assistant Professor, Department of Medicine, St Paul's Hospital, Division of Gastroenterology, Vancouver, British Columbia V6Z 1Y6, Canada

Ala I Sharara, MD, Professor, Division of Gastroenterology, Department of Internal Medicine, American University of Beirut Medical Center, Beirut 1107 2020, Lebanon

Vishal Sharma, MD, Associate Professor, Department of Gastroenterology, Postgraduate Institute of Medical Education and Research, Chandigarh 160012, India

Sunil G Sheth, MD, Associate Professor, Department of Medicine, Division of Gastroenterology, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA 02215, United States

Rui-Hua Shi, MD, PhD, Professor, Department of Gastroenterology, Southeast University, Zhongda Hospital, Nanjing 210009, Jiangsu Province, China

Qiang Shi, PhD, Associate Professor, Endoscopy Center, Zhongshan Hospital of Fudan University, Shanghai 200032, China

Yukihiro Shimizu, MD, PhD, Gastroenterology Center, Nanto Municipal Hospital, Nanto, Toyama 932-0211, Japan

Noam Shussman, MD, Department of General Surgery, Hadassah Hebrew University Medical Center, Jerusalem 91120, Israel

Giuseppe Sica, MD, PhD, Associate Professor, Department of Surgery, Tor Vergata University Hospital, Rome 00133, Italy

Predrag Sikiric, MD, PhD, Department of Pharmacology, School of Medicine, University of Zagreb, Zagreb 10000, Croatia

Aytan Sipahi, PhD, Assistant Professor, Department of Gastroenterology and Hepatology, University of São Paulo School of Medicine - LIM 07, São Paulo, SP 01246-903, Brazil

Ferenc Sipos, MD, PhD, Department of Hematology and Internal Medicine, Semmelweis University, Budapest 1088, Hungary

Stanislav Sitkin, MD, PhD, Associate Professor, Functional Metabolomics and Human Microbiome Research Group, Almazov National Medical Research Centre, Department of Internal Diseases, Gastroenterology and Dietetics, North-Western State Medical University named after I.I. Mechnikov, St. Petersburg 190000, Russia

Sinead M Smith, PhD, Assistant Professor, Department of Clinical Medicine, Trinity College Dublin, Dublin D24, Ireland

Ross Cyril Smith, MD, Professor, Division of Surgery, Head of the Cancer Surgery Research Laboratory, Kolling Institute, University of Sydney, StLeonards, NSW 2065, Australia

Rosa Leonôra Salerno Soares, MD, PhD, Professor, Department of Internal Medicine, Faculty of Medicine, Federal Fluminense University, Niterói, Rio de Janeiro 24030210, Brazil

Myeong Jun Song, PhD, Associate Professor, Department of Internal Medicine, Daejeon St. Mary's Hospital, College of Medicine, The Catholic University of Korea, Daejeon 301-723, South Korea

Maurizio Soresi, MD, Associate Professor, Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, Palermo 90127, Italy

Cosimo Sperti, MD, Associate Professor, Professor, Department of Surgery, Oncology and Gastroenterology, 1st General Surgery, University of Padua, Padua 35128, Italy

Giovanni Squadrito, MD, Professor, Clinical and Molecular Hepatology Unit, Department of Internal Medicine, University of Messina, Messina 98124, Italy

Carol Stanciu, Professor, Department of Gastroenterology, "Grigore T. Popa" University of Medicine and Pharmacy, "St. Spiridon" University Hospital, Institute of Gastroenterology and Hepatology, Iasi 700111, Romania

Adrian John Stanley, MD, Professor, Department of Gastroenterology, Glasgow Royal Infirmary, Glasgow G4 0SF, United Kingdom

Gabriele Stocco, PhD, PharmD, Associate Professor, Department of Medical, Surgical and Health Sciences, University of Trieste/Institute for Maternal and Child Health IRCCS Burlo Garofolo, Trieste 34127, Italy

Letitia Adela Maria Streba, MD, PhD, Professor, Department of Internal Medicine 1, Filantropia University Hospital, Craiova 200349, Romania

Koichi Suda, Professor, Department of Surgery, Fujita Health University, Toyoake, Aichi 470-1192, Japan

Mitsushige Sugimoto, MD, PhD, AGAF, Professor, Division of Genome-Wide Infectious Microbiology, Research Center for GLOBAL and LOCAL Infectious Disease, Oita University, 1-1 Idaigaoka, Hasama, Yufu, Oita 879-5593, Japan

Haruhiko Sugimura, MD, PhD, Professor, Department of Tumor Pathology, Hamamatsu University School of Medicine, Hamamatsu 431-3192, Japan

Keith Sultan, MD, Assistant Professor, Division of Gastroenterology, Northwell Health, North Shore University Hospital and Long Island Jewish Medical Center, Great Neck, NY 10021, United States

Si-Yu Sun, MD, PhD, Professor, Department of Gastroenterology, Shengjing Hospital of China Medical University, Shenyang 110004, Liaoning Province, China

Veysel Tahan, MD, Associate Professor, Department of Internal Medicine, Division of Gastroenterology and Hepatology, University of Missouri, Columbia, Missouri 65212, United States

Akihiro Tamori, MD, PhD, Professor, Department of Hepatology, Osaka City University Graduate School of Medicine, Osaka 5458585, Japan

Kok Yang Tan, Associate Professor, Department of Surgery, Khoo Teck Puat Hospital, Singapore 768828, Singapore

Yasuhito Tanaka, MD, PhD, Professor, Department of Gastroenterology and Hepatology, Faculty of Life Sciences, Kumamoto University, Kumamoto 860-0862, Japan

Naoki Tanaka, MD, PhD, Professor, Department of Global Medical Research Promotion, Shinshu University School of Medicine, Matsumoto, Nagano 390-8621, Japan

Giovanni Tarantino, MD, Professor, Senior Researcher, Department of Clinical Medicine and Surgery, Federico II University Medical School, Naples 80131, Italy

Oscar Tatsuya Teramoto-Matsubara, MD, Department of Gastroenterology and Endoscopy, ABC Medical Center, Mexico City 11000, Mexico

Ragesh Babu Thandassery, MD, Assistant Professor, Department of Medicine, Central Arkansas Veterans Healthcare Systen, Little Rock, AR 72205, United States

Konstantinos Thomopoulos, MD, Professor, Division of Gastroenterology, Department of Internal Medicine, University Hospital of Patras, Patras 26504, Greece

Guido Alberto Massimo Tiberio, MD, Professor, Surgical Clinic, Department of Clinical and Experimental Sciences, University of Brescia, Brescia 25100, Italy

Minoru Tomizawa, MD, PhD, Department of Gastroenterology, National Hospital Organization Shimoshizu Hospital, Yotsukaido City, Chiba 284-0003, Japan

Maria Lina Tornesello, PhD, Department of Research, Istituto Nazionale Tumori IRCCS Fond Pascale, Napoli 80131, Italy

Ervin Toth, MD, PhD, Endoscopy Unit, Department of Gastroenterology, Skåne University Hospital, Malmo 20502, Sweden

David Tougeron, MD, PhD, Full Professor, Department of Gastroenterology, Poitiers University Hospital, Poitiers 86000, France

Cristiane Valle Tovo, MD, PhD, Associate Professor, Department of Gastroenterology and Hepatology, Universidade Federal de Ciências da Saúde de Porto Alegre, Porto Alegre, RS 90050-170, Brazil

Osamu Toyoshima, MD, PhD, Professor, Department of Gastroenterology, Toyoshima Endoscopy Clinic, Tokyo 157-0066, Japan

Sombat Treeprasertsuk, MD, PhD, Professor, Department of Medicine, Division of Gastroenterology, Faculty of Medicine, Chulalongkorn University, and Thai Red Cross, Bangkok 10330, Thailand

John K Triantafillidis, MD, PhD, Associate Professor, Inflammatory Bowel Disease Unit, "Metropolitan General" Hospital, Holargos "Mediterraneo First Care" Glyfada, Holargos, Attica 15562, Greece

Konstantinos Triantafyllou, MD, PhD, Professor, Hepatogastroenterology Unit, Second Department of Internal Medicine – Propaedeutic, Medical School, National and Kapodistrian University of Athens, "Attikon" University General Hospital, Athens 12462, Greece

Anca Trifan, MD, Professor, Department of Gastroenterology and Internal Medicine, "Grigore T. Popa" University of Medicine and Pharmacy, "St. Spiridon" University Hospital, Institute of Gastroenterology and Hepatology, Iasi 700111, Romania

Dhiraj Tripathi, MD, Professor, Liver Unit, Queen Elizabeth Hospital, Birmingham B15 2TH, United Kingdom

Maria Fernanda Troncoso, PhD, Assistant Professor, Department of Biological Chemistry and Institute of Biochemistry and Biophysics, School of Pharmacy and Biochemistry, University of Buenos Aires and National Research Council of Argentina, Buenos Aires C1113AAD, Argentina

Apostolos Tsolakis, MD, PhD, Department of Oncology and Pathology, Karolinska Institutet, Stockholm 171 76, Sweden

Georgios Tsoulfas, MD, PhD, Professor, Department of Transplant Surgery, Aristotle University of Thessaloniki School of Medicine, Thessaloniki 54124, Greece

Yosuke Tsuji, MD, PhD, Assistant Professor, Department of Gastroenterology, Graduate School of Medicine, The University of Tokyo, Tokyo 113-8655, Japan

Hong Tu, MD, PhD, Professor, State Key Laboratory of Oncogenes and Related Genes, Shanghai Cancer Institute, Renji Hospital, Shanghai Jiao-Tong University School of Medicine, Shanghai 200032, China

Zsolt Tulassay, MD, Molecular Medicine Research Group, Hungarian Academy of Sciences, Budapest 1088, Hungary

Gokhan Tumgor, MD, PhD, Professor, Pediatric Gastroenterology, Cukurova University Medical Faculty, Adana 01380, Türkiye

Balasubramaniyan Vairappan, PhD, Professor, Liver Diseases Research Lab, Department of Biochemistry, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry 605006, India

Abhinav Vasudevan, PhD, Adjunct Associate Professor, Department of Gastroenterology and Hepatology, Eastern Health, Box Hill 3128, Australia

Gilberto Vaughan, PhD, Division of Viral Hepatitis, Centers for Disease Control and Prevention, Atlanta, GA 30329, United States

Umberto Vespasiani-Gentilucci, PhD, Full Professor, Department of Internal Medicine, Università Campus Bio-Medico of Rome, Head of the Unit of Autoimmune and Metabolic Liver Diseases, Fondazione Policlinico Campus Bio-Medico of Rome, Rome 00128, Italy

Silvia Vidal, PhD, Assistant Professor, Immunology, Institut Investigacions Biomediques-Institut Recerca Hospital Sant Pau, Barcelona 08025, Spain

Yirupaiahgar K S Viswanath, Professor, Department of Upper GI Surgery Endoscopy and Laparoscopic Surgery, James Cook University Hospital, Middlesbrough, Cleveland TS4 3BW, United Kingdom

Marco Vivarelli, MD, Professor, Department of Experimental and Clinical Medicine, Polytechnic University of Marche, Hepatobiliary, Pancreatic and Abdominal Transplantation Surgery, Ospedali Riuniti delle Marche, via Conca 71, Ancona 60126, Italy

Tamara Vorobjova, MD, PhD, Associate Professor, Department of Immunology, Institute of Biomedicine and Translational Medicine, University of Tartu, Tartu 51014, Estonia

Yu-Gang Wang, MD, Professor, Department of Gastroenterology, Tongren Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200336, China

Yuan-Hung Wang, PhD, Associate Professor, Graduate Institute of Clinical Medicine, Taipei Medical University, Taipei 110, Taiwan

Nir Wasserberg, MD, Associate Professor, Professor, Department of Surgery, Rabin Medical Center, Petach Tiqwa 49100, Israel

David I Watson, MD, PhD, Professor, Flinders University Discipline of Surgery, Flinders University, Flinders Medical Centre, Adelaide, South Australia 5042, Australia

Charles Melbern Wilcox, MD, Professor, Medicine, Division of Gastroenterology and Hepatology, University of Alabama at Birmingham, Birmingham, AL 35294, United States

Tibor Wittmann, MD, PhD, Professor, First Department of Medicine, University of Szeged, Szeged H-6720, Hungary

Qi Xie, MD, PhD, Professor, Department of Medical Imaging, Nansha Hospital, Guangzhou First People's Hospital, School of Medicine, South China University of Technology, Guangzhou 511457, Guangdong Province, China

Cheng-Fu Xu, MD, Chief Physician, Professor, Department of Gastroenterology, The First Affiliated Hospital, Zhejiang University School of Medicine, Hangzhou 310003, Zhejiang Province, China

Feng Yang, MD, PhD, Associate Professor, Department of Pancreatic Surgery, Huashan Hospital, Shanghai Medical College, Fudan University, Shanghai 200040, China

Tzung-Hai Yen, MD, PhD, Professor, Department of Nephrology, Chang Gung Memorial Hospital, No. 5 Fu-Hsing Street, Kweishan, Taoyuan City 333, Taiwan

Desmond Yip, MD, Professor, Department of Medical Oncology, The Canberra Hospital, Garran, ACT 2606, Australia

Michele Yip-Schneider, PhD, Professor, Department of Surgery, Indiana University School of Medicine, Indianapolis, IN 46202, United States

Kentaro Yoshioka, MD, PhD, Center for Liver Diseases, Meijo Hospital, Nagoya, Aichi 460-0001, Japan

Yan-Bo Yu, MD, Professor, Department of Gastroenterology, Laboratory of Translational Gastroenterology, Qilu Hospital, Shandong University, Jinan 250012, Shandong Province, China

Chao-Hui Yu, MD, PhD, Professor, The First Affiliated Hospital, College of Medicine, Zhejiang University, Hangzhou 310003, Zhejiang Province, China

Ilhami Yuksel, MD, Professor, Department of Gastroenterology, Ankara Bilkent City Hospital, Ankara 06800, Türkiye; Department of Gastroenterology, Ankara Yildirim Beyazit University, School of Medicine, Ankara 06300, Türkiye

Cyrla Zaltman, MD, PhD, Associate Professor, Department of Internal Medicine, Federal University of Rio de Janeiro, Rio de Janeiro 21941-913, Brazil

Li Zhang, MD, PhD, School of Biotechnology and Biomolecular Sciences, University of New South Wales, Sydney, NSW 2052, Australia

Ce-Fan Zhou, PhD, Professor, School of Life and Health Sciences, Institute of Biomedical Research, National "111" Center for Cellular Regulation and Molecular Pharmaceutics, Key Laboratory of Fermentation Engineering (Ministry of Education), Hubei University of Technology, Wuhan 430068, Hubei Province, China

Demosthenes E Ziogas, MD, PhD, Assistant Professor, Department of Surgery, University of Ioannina, Ioannina GR 45110, Greece

World Journal of Gastroenterology

Contents

Weekly Volume 32 Number 39 October 21, 2026

EDITORIAL

Chang FC, Tsai CY, Koh KJ, Huang CS. New insights into the pathogenic variation landscape in pediatric gastroenterology diseases. *World J Gastroenterol* 2026; 32(39): 120428 [DOI: 10.3748/wjg.120428]

Krishnan A. Imaging tumor heterogeneity to predict response to transarterial chemoembolization in hepatocellular carcinoma. *World J Gastroenterol* 2026; 32(39): 120606 [DOI: 10.3748/wjg.120606]

OPINION REVIEW

Dous C. Diagnostic accuracy in early gastric cancer: Is endoscopic ultrasound staging still reliable? *World J Gastroenterol* 2026; 32(39): 119757 [DOI: 10.3748/wjg.119757]

Maurya DK, Sharma P. Berberine as a dual-target therapeutic for ulcerative colitis. *World J Gastroenterol* 2026; 32(39): 119800 [DOI: 10.3748/wjg.119800]

MINIREVIEWS

Saleh A, Yessin A, Salva W, Batarseh M, El Khoury M, Nehme F. Endoscopic ultrasound-guided gastrointestinal anastomosis: Evolving applications in advanced therapeutic endoscopy. *World J Gastroenterol* 2026; 32(39): 120546 [DOI: 10.3748/wjg.120546]

ORIGINAL ARTICLE

Retrospective Cohort Study

Kim DY, Jeong J, Hong JP, Lee JS, Kim MN, Kim BK, Kim SU, Park JY, Ahn SH, Kim DY, Lee HW. Resolved hepatitis B is associated with higher reactivation risk than chronic infection after chemoembolization for hepatocellular carcinoma. *World J Gastroenterol* 2026; 32(39): 120320 [DOI: 10.3748/wjg.120320]

Retrospective Study

Monti M, Ceredi B, Paganelli N, Vespignani R, Andalò A, De Angelis P, Gentili N, Massa I, Roncadori A, Danesi V, Balzi W. Alarm from the peritoneum: Gastrointestinal perforations in cancer patients, with a focus on perforations of unknown origin. *World J Gastroenterol* 2026; 32(39): 119719 [DOI: 10.3748/wjg.119719]

Observational Study

Zhang FY, Xu LM, Gao FY, Wang W, Lin WL, Zhang H, Wang KZ, Wang QJ, Jin AJ, Yang RP, Qu CY, Zhang Y, Li ZH, Wang D, Shi CC, Shen TB, Shen F, Hu Y, Shen F. Endoscopic score predicting recurrence after foam sclerotherapy in grade I internal hemorrhoids: Development and external validation. *World J Gastroenterol* 2026; 32(39): 121904 [DOI: 10.3748/wjg.121904]

Prospective Study

Yang GY, Zhang XF, Zhao X, Qu H, Zhou P, Wang Y, Tu SM, Xia ZY, Chu QJ. Postoperative nausea and vomiting after laparoscopic sleeve gastrectomy: A prospective cohort study. *World J Gastroenterol* 2026; 32(39): 120167 [DOI: 10.3748/wjg.120167]

World Journal of Gastroenterology

Weekly Volume 32 Number 39 October 21, 2026

Contents

Basic Study

Luo YZ, Zhao Q, Wang FF, Li JH, Lyu SC, Liu Z, Lang R, He Q. Androgen-induced gene 1 correlates with extracellular vesicle-associated cholesterol metabolism and hepatic metastasis of pancreatic cancer. *World J Gastroenterol* 2026; 32(39): 121007 [DOI: 10.3748/wjg.121007]

Sall T, Litvinova E, Arzhanova E, Sitkin S, Vakhitov T. Gut microbial metabolites as key mediators in inflammatory bowel disease. *World J Gastroenterol* 2026; 32(39): 121041 [DOI: 10.3748/wjg.121041]

META-ANALYSIS

Gong EJ, Bang CS, Lee JJ, Baik GH. Comparative efficacy and pharmacological heterogeneity of individual potassium-competitive acid blockers: A systematic review and network meta-analysis. *World J Gastroenterol* 2026; 32(39): 121372 [DOI: 10.3748/wjg.121372]

CORRESPONDENCE

Jimenez Jimenez E, Romero-Zoghbi SE, López-Campos F, Couñago F. Letter to the Editor: Beyond ypN status: Lymph node regression grade refines risk stratification in rectal cancer. *World J Gastroenterol* 2026; 32(39): 120225 [DOI: 10.3748/wjg.v32.i39.120225]

Polivanova TV, Kasparov EV, Vshivkov VA. Letter to the Editor: Chaihu-Shugan-San in the treatment of atrophic gastritis. *World J Gastroenterol* 2026; 32(39): 122644 [DOI: 10.3748/wjg.122644]

Garbuzenko DV. Letter to the Editor: Current approaches to the management of colonic variceal bleeding. *World J Gastroenterol* 2026; 32(39): 123238 [DOI: 10.3748/wjg.123238]

World Journal of Gastroenterology

Weekly Volume 32 Number 39 October 21, 2026

Contents

ABOUT COVER

Peer Review of *World Journal of Gastroenterology*, Wei-Jia Liao, Professor, Chief Physician, Laboratory of Hepatobiliary and Pancreatic Surgery, The First Affiliated Hospital of Guilin Medical University, No. 15 Lequn Road, Xiufeng District, Guilin 541001, Guangxi Zhuang Autonomous Region, China. liaoweijia288@163.com

AIMS AND SCOPE

World Journal of Gastroenterology is an international, peer-reviewed, open-access journal dedicated to advancing cutting-edge research and clinical practice across the full spectrum of gastroenterology and hepatology. The journal welcomes studies addressing diseases of the esophagus, stomach, small intestine, colon and rectum, pancreas, gallbladder, bile ducts, and liver. The journal publishes a diverse range of article types, including: Original clinical and basic research, translational studies, reviews and mini-reviews, editorials and correspondences, and case reports. We invite researchers, clinicians, and multidisciplinary experts worldwide to submit high-quality manuscripts and contribute to shaping the future of gastrointestinal science.

INDEXING/ABSTRACTING

The *WJG* is now abstracted and indexed in Science Citation Index Expanded (SCIE), Scopus, *Reference Citation Analysis*. The 2026 edition of Journal Citation Reports® cites the 2025 journal impact factor (JIF) for *WJG* as 7.7; Quartile: Q1. The *WJG*'s CiteScore for 2025 is 8.3.

RESPONSIBLE EDITORS FOR THIS ISSUE

Production Editor: *Cai-Hong Wang*; **Production Department Director:** *Xiang Li*; **Cover Editor:** *Jia-Ru Fan.*

NAME OF JOURNAL
World Journal of Gastroenterology

ISSN
ISSN 1007-9327 (print) ISSN 2219-2840 (online)

LAUNCH DATE
October 1, 1995

FREQUENCY
Weekly

EDITORS-IN-CHIEF
Andrzej S Tarnawski

EDITORIAL BOARD MEMBERS
http://www.wjgnet.com/1007-9327/editorialboard.htm

PUBLICATION DATE
October 21, 2026

COPYRIGHT
© 2026 Baishideng Publishing Group Inc

GUIDELINES FOR AUTHORS
https://www.wjgnet.com/bpg/gerinfo/204

EDITORIAL POLICIES
https://www.wjgnet.com/bpg/gerInfo/285

EDITORIAL PROCESS
https://www.wjgnet.com/bpg/gerInfo/316

PEER-REVIEW PROCESS
https://www.wjgnet.com/bpg/gerinfo/241

ETHICS STATEMENTS OF HUMAN
https://www.wjgnet.com/bpg/gerinfo/238

PUBLICATION ETHICS
https://www.wjgnet.com/bpg/gerinfo/288

ARTICLE PROCESSING CHARGE
https://www.wjgnet.com/bpg/gerinfo/242

SUBMIT A MANUSCRIPT
https://www.f6publishing.com

Published by Baishideng Publishing Group Inc. 7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568 **E-mail:** office@baishideng.com https://www.wjgnet.com

World Journal of Gastroenterology

Submit a Manuscript: https://www.f6publishing.com

World J Gastroenterol 2026 October 21; 32(39): 120167

DOI: 10.3748/wjg.120167

ISSN 1007-9327 (print) ISSN 2219-2840 (online)

ORIGINAL ARTICLE

Prospective Study

Postoperative nausea and vomiting after laparoscopic sleeve gastrectomy: A prospective cohort study

Guan-Yu Yang, Xiao-Fei Zhang, Xin Zhao, Huan Qu, Piao Zhou, Yan Wang, Shu-Min Tu, Zheng-Yuan Xia, Qin-Jun Chu

Peer review: Externally peer reviewed.
Peer-review model: Single blind
Peer-review report's classification
Scientific quality: Grade A, Grade A, Grade A, Grade B
Novelty: Grade B, Grade B, Grade B, Grade B
Creativity or innovation: Grade B, Grade B, Grade B, Grade C
Scientific significance: Grade A, Grade A, Grade B, Grade C
P-Reviewer: Othman AA, Lecturer, MD, PhD, Egypt; Zhou JH, Associate Chief Physician, MD, China
Received: February 24, 2026
Revised: March 30, 2026
Accepted: May 25, 2026
Published online: October 21, 2026
Processing time: 204 Days and 13.4 Hours
Copyright: ©Author(s) 2026. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution-NonCommercial (CC BY-NC 4.0) license. No commercial re-use. See permissions. **Published by** Baishideng Publishing Group Inc.

Guan-Yu Yang, Xiao-Fei Zhang, Xin Zhao, Huan Qu, Piao Zhou, Yan Wang, Shu-Min Tu, Zheng-Yuan Xia, Qin-Jun Chu, Department of Anesthesiology and Perioperative Medicine, Zhengzhou Central Hospital Affiliated to Zhengzhou University, Zhengzhou 450007, Henan Province, China

ORCID number: Guan-Yu Yang 0000-0002-6087-2180; Zheng-Yuan Xia 0000-0002-7002-5524; Qin-Jun Chu 0000-0001-9210-5691.

Co-first authors: Guan-Yu Yang and Xiao-Fei Zhang.

Corresponding author: Qin-Jun Chu, MD, PhD, Professor, Department of Anesthesiology and Perioperative Medicine, Zhengzhou Central Hospital Affiliated to Zhengzhou University, No. 16 Tongbai North Road, Zhongyuan District, Zhengzhou 450007, Henan Province, China. jimmynetchu@163.com

Abstract

BACKGROUND

Postoperative nausea and vomiting (PONV) remains a common and clinically important problem after laparoscopic sleeve gastrectomy (LSG), even with routine multimodal prophylaxis. Existing studies have often relied on retrospective designs or simple binary outcomes, which may not adequately reflect the full burden of postoperative symptoms.

AIM

To estimate the incidence and severity of PONV after LSG and to identify perioperative factors associated with its development.

METHODS

This prospective cohort study included consecutive adults undergoing elective LSG between March 2022 and December 2023. PONV was assessed using the validated Chinese version of the Index of Nausea, Vomiting, and Retching at seven time points during the first 3 postoperative days. Demographic, clinical, and perioperative data were collected. Potential predictors were screened using least absolute shrinkage and selection operator regression and then entered into multivariable logistic regression models.

RESULTS
A total of 1054 patients were included in the final analysis. During the 3-day postoperative period, 804 patients experienced at least one episode of PONV, yielding an overall incidence of 76.3%. Nausea occurred in 73.7% of patients, vomiting in 50.3%, and retching in 35.0%. In multivariable analysis, intraoperative dexmedetomidine use was independently associated with a lower risk of PONV [odds ratio (OR) = 0.50; 95%CI: 0.36-0.70; $P < 0.001$]. Apfel scores of 3 (OR = 4.27; 95%CI: 1.33-13.55; $P = 0.013$) and 4 (OR = 4.93; 95%CI: 1.51-15.94; $P = 0.007$) were associated with an increased risk.

CONCLUSION
PONV remains highly prevalent after LSG despite guideline-based prophylaxis. Intraoperative dexmedetomidine was associated with a reduced risk of PONV, whereas higher Apfel scores predicted an increased risk. These findings may help refine antiemetic strategies for patients undergoing LSG.

Key Words: Postoperative nausea and vomiting; Laparoscopic sleeve gastrectomy; Dexmedetomidine; Apfel score; Index of Nausea, Vomiting, and Retching

Core Tip: In this prospective cohort study of 1054 patients undergoing laparoscopic sleeve gastrectomy, postoperative nausea and vomiting (PONV) remained highly prevalent despite multimodal prophylaxis, affecting 76.3% of patients. Using the validated Index of Nausea, Vomiting, and Retching, we found that intraoperative dexmedetomidine was associated with lower odds of PONV, whereas Apfel scores of 3-4 were associated with a substantially increased risk even with guideline-based prevention. These findings suggest a potential benefit of dexmedetomidine in this setting, although randomized controlled trials are needed to confirm causality. More effective antiemetic strategies, including additional pharmacological and non-pharmacological approaches, may be warranted for patients at high risk of PONV after laparoscopic sleeve gastrectomy.

Citation: Yang GY, Zhang XF, Zhao X, Qu H, Zhou P, Wang Y, Tu SM, Xia ZY, Chu QJ. Postoperative nausea and vomiting after laparoscopic sleeve gastrectomy: A prospective cohort study. *World J Gastroenterol* 2026; 32(39): 120167
URL: https://www.wjgnet.com/1007-9327/full/v32/i39/120167.htm
DOI: https://dx.doi.org/10.3748/wjg.120167

INTRODUCTION

Laparoscopic sleeve gastrectomy (LSG) has become one of the most frequently performed procedures in metabolic and bariatric surgery worldwide[1]. Although perioperative management has improved considerably, postoperative nausea and vomiting (PONV) remains one of the most troublesome complications after LSG and may impair oral intake, delay mobilization, and prolong recovery[2-4].

The high incidence of PONV after LSG is likely multifactorial. Surgical manipulation of the stomach may stimulate vagal afferents and trigger the release of emetogenic mediators[5]. In addition, the reduced gastric volume and compliance after sleeve formation may increase intragastric pressure, contributing to gastric distension and reflux, both of which can promote nausea and vomiting[5,6]. These effects may be particularly relevant in the early postoperative period, when patients are adapting to the physiological changes caused by surgery.

Although previous studies have shown that PONV is common after LSG, several limitations remain. Many were retrospective in design, enrolled relatively small samples, or used binary definitions that do not capture the full spectrum of postoperative symptoms[6-9]. Retching is often underrecognized, despite being highly distressing for patients. A more detailed and prospective assessment is therefore needed to better characterize the postoperative symptom burden in this population.

To address this gap, we conducted a prospective cohort study using the Chinese version of the Index of Nausea, Vomiting, and Retching (INVR), a validated instrument that allows graded assessment of postoperative symptoms[10,11]. By combining repeated symptom measurements with regression-based variable selection, we aimed to estimate the incidence and severity of PONV after LSG and to identify perioperative factors independently associated with its occurrence.

MATERIALS AND METHODS

Study design and participants

This study was approved by the Medical Ethics Committee of Zhengzhou Central Hospital Affiliated to Zhengzhou University (approval No. 202207) on January 10, 2022, and was conducted in accordance with the Declaration of Helsinki. All patients provided written informed consent before enrollment.

We enrolled consecutive adults aged 18 years or older who were scheduled for elective LSG under general anesthesia and had an American Society of Anesthesiologists physical status of II or III. Recruitment was carried out between March 2022 and December 2023. Patients were not included if surgery was canceled on the day of operation, if they were transferred to the intensive care unit after surgery, if they underwent additional combined procedures, or if they had a mental or neurological condition that could interfere with outcome assessment. We also excluded patients who declined participation, had missing key data, or were unable to complete follow-up assessments.

Data collection

Trained research staff collected demographic and clinical data from medical records and perioperative assessments. The variables recorded included sex, age, height, weight, body mass index, American Society of Anesthesiologists physical status, Apfel score, smoking history, previous PONV, history of motion sickness, and comorbidities such as hypertension and diabetes. Perioperative data encompassed intraoperative consumption of sufentanil and remifentanil, use of dexmedetomidine (yes/no), the number of prophylactic antiemetic types administered (1-4), duration of anesthesia, total volume of fluid administered, INVR scores, Quality of Recovery-15 (QoR-15) scores (preoperative and 24 hours and 48 hours postoperatively), postoperative complications (*e.g.*, dehydration, electrolyte imbalances, wound issues, staple line complications, intra-abdominal infection, respiratory infection, and reoperation), time to first flatus, and length of postoperative hospital stay.

Variable definitions

Dexmedetomidine use was defined as administration of a standardized loading dose of 0.5 μg/kg (no maintenance infusion), as documented in the anesthetic record. Smoking history was defined as any regular tobacco use documented in the medical record. PONV history and motion sickness history were self-reported during the preoperative interview, defined respectively as prior postoperative nausea/vomiting and prior travel-related dizziness, nausea, or vomiting.

Perioperative management

A standardized anesthetic protocol was followed. For patients receiving dexmedetomidine, a standardized loading dose of 0.5 μg/kg was administered intravenously over 10 minutes upon arrival in the operating room; no maintenance infusion was given. The decision to administer dexmedetomidine was at the discretion of the attending anesthesiologist. General anesthesia was induced with intravenous sufentanil (0.3-0.5 μg/kg), propofol (1.5-2.5 mg/kg), and rocuronium (0.6-1.2 mg/kg). After endotracheal intubation, anesthesia was maintained with propofol (4-8 mg/kg/hour), sevoflurane (1%-2%), and a continuous infusion of remifentanil (0.1-0.2 μg/kg/minutes), with intermittent boluses of rocuronium as needed. As a standard part of the analgesic regimen, all patients received a bilateral paravertebral block and standardized patient-controlled intravenous analgesia. The PCA solution contained sufentanil (100 μg), oxycodone (20 mg), and flurbiprofen axetil (300 mg), diluted with normal saline to a final volume of 100 mL. The pump was set to deliver a continuous background infusion of 1 mL/hour, with a patient-activated bolus dose of 3.5 mL, a lockout interval of 5 minutes, and a maximum infusion rate of 10 mL/hour.

At the end of surgery, neuromuscular blockade was routinely reversed with sugammadex (2 mg/kg) in all patients. After tracheal extubation, patients were transferred to the post-anesthesia care unit for further observation.

Antiemetic prophylaxis was given intravenously according to the patient's Apfel score[12]. Patients with a score of 0 received dexamethasone (4-8 mg). Those with scores of 1-2 were given dexamethasone (4-8 mg) together with tropisetron (5 mg). In patients with scores of 3-4, additional antiemetic agents were used at the anesthesiologist's discretion, including metoclopramide (10 mg) and/or droperidol (1 mg), in combination with dexamethasone and tropisetron.

For rescue treatment of PONV, intravenous fosaprepitant (150 mg) was administered when symptoms occurred within the first 6 postoperative hours. Beyond 6 hours, either ondansetron (4 mg) or fosaprepitant (150 mg) was used.

Assessment of PONV

The primary outcome was assessed using the validated Chinese version of the INVR[11]. The INVR is a multidimensional instrument that quantifies the severity of nausea, vomiting, and retching. It comprises eight items scored on a 5-point Likert scale (0 = "not at all", 4 = "very severe and intolerable"). The total score ranges from 0 to 32, with higher scores indicating more severe symptoms.

Two trained research nurses administered the INVR to assess symptoms since the last assessment at seven predefined time points: 1 day before surgery, at 20:00 on the day of surgery, and at 8:00 and 20:00 on postoperative days (PODs) 1-3. For patients discharged before a scheduled assessment, the evaluation was completed *via* telephone follow-up.

Outcomes

The primary outcome was the incidence of PONV within the first 3 PODs. PONV was defined as a total INVR score > 0 at any of the seven postoperative assessments, consistent with the validated use of the INVR where any score > 0 indicates the presence of nausea, vomiting, or retching[10,11]. This definition follows the validated use of the INVR scale and is consistent with the binary framework (presence *vs* absence) commonly employed in clinical PONV research, although the INVR may detect milder symptoms than those captured in some traditional assessments[2-4,12].

Secondary outcomes: (1) The incidence and severity of the individual symptom dimensions (nausea, vomiting, and retching); (2) The total and dimensional INVR scores across the assessment time points; (3) Identification of factors associated with PONV; and (4) Postoperative complications and other recovery metrics, including QoR-15 scores at 24 hours and 48 hours postoperatively, time to first flatus, and length of postoperative hospital stay.

Statistical analysis

As a prospective observational study employing consecutive sampling, a formal *a priori* sample size calculation was not performed. The study aimed to include all eligible patients during the enrollment period. The final cohort included 1054 patients, among whom 804 experienced PONV. For the multivariable logistic regression model, the events-per-variable ratio was approximately 89 for the nine variables entered into the analysis, which was well above the commonly cited minimum of 10 events per variable[13]. This supported the stability of the model estimates and provided sufficient statistical power.

Continuous variables with a normal distribution were presented as mean ± SD, whereas those with a skewed distribution were expressed as median (interquartile range). Categorical variables were reported as *n* (%). The Kolmogorov-Smirnov test was used to assess normality.

To identify factors associated with PONV, least absolute shrinkage and selection operator (LASSO) regression was first employed for variable selection. All candidate variables listed in Table 1 were entered into the LASSO regression, with the penalty parameter (λ) selected *via* 10-fold cross-validation based on the minimum mean squared error criterion. Variables with non-zero coefficients at the optimal λ value were retained as potential predictors. Subsequently, multivariable binary logistic regression was performed, including the LASSO-selected variables. Multicollinearity was assessed using the variance inflation factor (VIF), with VIF < 5 considered acceptable. Odds ratios (OR) and 95%CI were calculated.

Two sensitivity analyses were performed using alternative outcome definitions. The first analysis defined moderate-to-severe PONV as an INVR total score > 8, consistent with previous studies that used this threshold to identify clinically significant symptoms requiring intervention[14,15]. The second analysis defined vomiting only as a score > 0 on the vomiting dimension of the INVR at any of the seven postoperative assessments. The same LASSO regression variable selection process and multivariable logistic regression analyses were applied for these outcomes.

All statistical analyses were performed using R software version 4.5.1 (R Development Core Team, Vienna, Austria). A two-sided $P < 0.05$ was considered statistically significant.

RESULTS

Patient characteristics

During the study period, 1181 patients were screened, and 1054 were included in the final analysis (Figure 1). Among the 127 excluded patients, 5 (0.4% of those screened) were excluded due to missing data; given the negligible proportion, no formal imputation or missingness assessment was performed. The baseline and perioperative characteristics of the entire cohort, stratified by the occurrence of PONV, are summarized in Table 1.

Primary outcome

The cumulative incidence of PONV over the first 3 PODs, defined as any INVR score > 0 at any of the seven assessment timepoints, was 76.3% (804/1054). The incidence of moderate-to-severe PONV, defined as an INVR score > 8, was 34.3% (362/1054). Nausea was the most common symptom, occurring in 73.7% of patients, followed by vomiting in 50.3% and retching in 35.0%.

Secondary outcomes

The longitudinal changes in total and dimensional INVR scores are shown in Figure 2. Symptom severity reached its highest level on the morning of POD 1 (POD 1a) and then gradually declined over time. Supplementary Tables 1-3 summarize the distribution of symptom grades at each assessment point and show the proportions of patients with mild, moderate, and severe symptoms. On POD 1a, severe nausea (grade III-IV) was reported by 16.9% of patients (178/1054), and severe vomiting (grade III-IV) by 5.9% (62/1054). The daily incidence of each symptom dimension is visualized in Figure 3.

Following variable selection using LASSO regression (LASSO coefficient paths and cross-validation plots are shown in Supplementary Figure 1), nine candidate variables were identified and subsequently entered into the multivariable logistic regression analysis: (1) Sex; (2) Height; (3) Apfel score; (4) Hypertension; (5) Intraoperative sufentanil consumption; (6) Intraoperative use of dexmedetomidine; (7) Number of antiemetic types; (8) Duration of anesthesia; and (9) Preoperative INVR score. Multivariable logistic regression analysis with PONV as the outcome was performed (Figure 4). Compared with patients having an Apfel score of 0, those with scores of 3 (OR = 4.27; 95%CI: 1.33-13.55; P = 0.013) and 4 (OR = 4.93; 95%CI: 1.51-15.94; P = 0.007) had significantly increased odds of PONV. Intraoperative use of dexmedetomidine was associated with significantly lower odds of PONV (OR = 0.50; 95%CI: 0.36-0.70; $P < 0.001$). All VIF values were below 5 (range: 1.01-1.92), indicating no significant multicollinearity among the predictors.

Sensitivity analyses using moderate-to-severe PONV (INVR > 8) and vomiting only as outcomes confirmed that dexmedetomidine was associated with a lower risk of PONV (OR = 0.69; 95%CI: 0.52-0.90; P = 0.006 for moderate-to-severe PONV; OR = 0.68; 95%CI: 0.52-0.88; P = 0.004 for vomiting only). Detailed results are presented in Supplementary Tables 4 and 5.

Outcomes

Postoperative recovery outcomes are summarized in Table 2. Among the 1054 patients, 8 postoperative complication events were documented: (1) 3 cases of suspected intra-abdominal infection; (2) 4 cases of respiratory infection; and (3) 1

Table 1 Baseline and perioperative characteristics, median (interquartile range)/*n* (%)

Variables	Total (*n* = 1054)	Non-PONV (*n* = 250)	PONV (*n* = 804)
Sex			
Male	325 (30.8)	112 (44.8)	213 (26.5)
Female	729 (69.2)	138 (55.2)	591 (73.5)
Age (years)	32 (26-38)	33 (27-38)	32 (26-37)
Height (cm)	165.0 (160.5-172.0)	168.0 (162.0-175.0)	165.0 (160.0-170.0)
Weight (kg)	107.0 (93.1-126.7)	113.0 (98.0-131.8)	105.0 (92.2-123.9)
BMI (kg/m^2)	39.0 (34.8-44.1)	39.6 (35.7-44.3)	38.7 (34.5-44.1)
ASA grade			
II	591 (56.1)	131 (52.4)	460 (57.2)
III	463 (43.9)	119 (47.6)	344 (42.8)
Smoking history	330 (31.3)	109 (43.6)	221 (27.5)
PONV history	474 (45.0)	89 (35.6)	385 (47.9)
Motion sickness history	424 (40.2)	77 (30.8)	347 (43.2)
Apfel score			
0	17 (1.6)	8 (3.2)	9 (1.1)
1	176 (16.7)	71 (28.4)	105 (13.1)
2	209 (19.8)	57 (22.8)	152 (18.9)
3	324 (30.7)	61 (24.4)	263 (32.7)
4	328 (31.1)	53 (21.2)	275 (34.2)
Hypertension	231 (21.9)	71 (28.4)	160 (19.9)
Diabetes	237 (22.5)	56 (22.4)	181 (22.5)
Types of antiemetics			
1	17 (1.6)	5 (2.0)	12 (1.5)
2	385 (36.5)	66 (26.4)	319 (39.7)
3	245 (23.2)	55 (22.0)	190 (23.6)
4	407 (38.6)	124 (49.6)	283 (35.2)
Fluid administration (mL)	1000 (1000-1200)	1000 (1000-1200)	1000 (1000-1200)
Duration of anesthesia (minutes)	133 (115-156)	130 (110-152)	135 (115-160)
Sufentanil consumption (μg)	40 (30-45)	40 (35-45)	40 (30-45)
Remifentanil consumption (μg)	821 (615-1004)	851 (649-1068)	810 (606-998)
Dexmedetomidine	630 (59.8)	181 (72.4)	449 (55.8)
Preoperative INVR score	0.0 (0.0-0.0)	0.0 (0.0-0.0)	0.0 (0.0-0.0)
Preoperative QoR-15 score	146 (141-150)	148 (142-150)	146 (141-150)

ASA: American society of Anesthesiologists; BMI: Body mass index; INVR: Index of Nausea, Vomiting, and Retching; PONV: Postoperative nausea and vomiting; QoR-15: Quality of Recovery-15.

case of reoperation.

DISCUSSION

In this large prospective cohort study utilizing the INVR, we found that PONV remains a pervasive challenge after LSG, affecting more than three-quarters of patients despite routine multimodal prophylaxis. Nausea was the most prevalent

Table 2 Postoperative recovery outcomes, median (interquartile range)/*n* (%)

Outcomes	Non-PONV (*n* = 250)	PONV (*n* = 804)
Time to first flatus (hours)	21 (14-28)	22 (16-28)
Postoperative hospital stays (days)	3 (3-4)	3 (3-4)
Postoperative 24 hours QoR-15 score	131 (123-136)	122 (112-131)
Postoperative 48 hours QoR-15 score	139 (134-145)	136 (129-141)
Postoperative complications	2 (0.8)	6 (0.7)

PONV: Postoperative nausea and vomiting; QoR-15: Quality of Recovery-15.

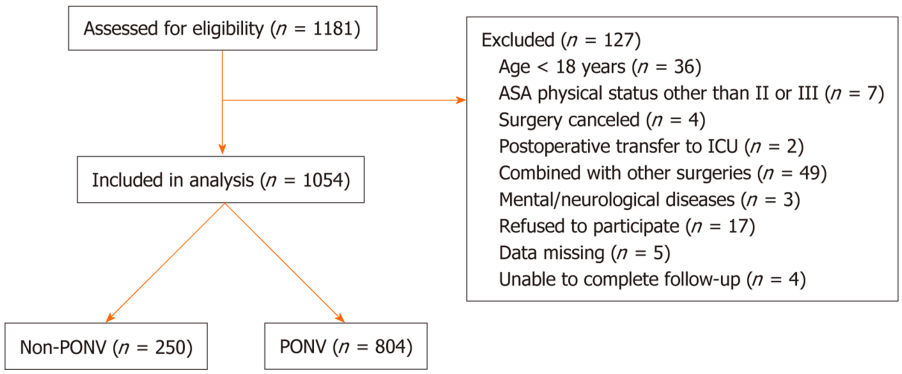

Figure 1 Flowchart of patient enrollment and exclusion. ASA: American society of Anesthesiologists; ICU: Intensive care unit; PONV: Postoperative nausea and vomiting.

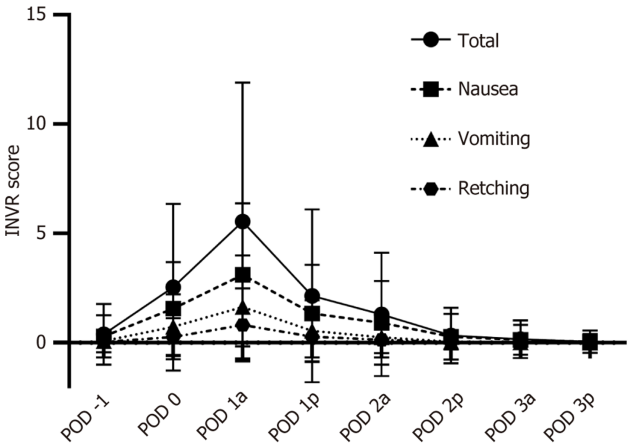

Figure 2 Trends in Index of Nausea, Vomiting, and Retching scores. Postoperative day (POD)-1, POD 0, and POD 1a, *etc*., represent the preoperative day, the day of surgery, and PODs 1, 2, 3, *etc*., respectively. The suffixes "a" and "p" denote assessment times of 8:00 and 20:00, respectively. INVR: Index of Nausea, Vomiting, and Retching; POD: Postoperative day.

symptom (73.7%), followed by vomiting (50.3%) and retching (35.0%). Notably, intraoperative use of dexmedetomidine was independently associated with a significantly lower risk of PONV, while Apfel scores of 3-4 were associated with a markedly increased risk.

Dexmedetomidine use was associated with lower odds of PONV in this LSG cohort, which is in line with its reported antiemetic effects. At the same time, the Apfel score remained a useful predictor of risk even when prophylaxis was adjusted according to baseline risk.

Several points may help explain why the incidence of PONV in our cohort was so high. First, the use of the INVR allowed us to capture the full range of postoperative symptoms, including retching, which is often missed in studies that rely on binary outcomes alone. Our definition of PONV (INVR score > 0) was based on the validated use of the scale[10, 11] and was intended to avoid overlooking mild but clinically relevant symptoms that may still affect recovery. It also remained consistent with the conventional clinical definition of PONV[12]. We recognize, however, that this threshold

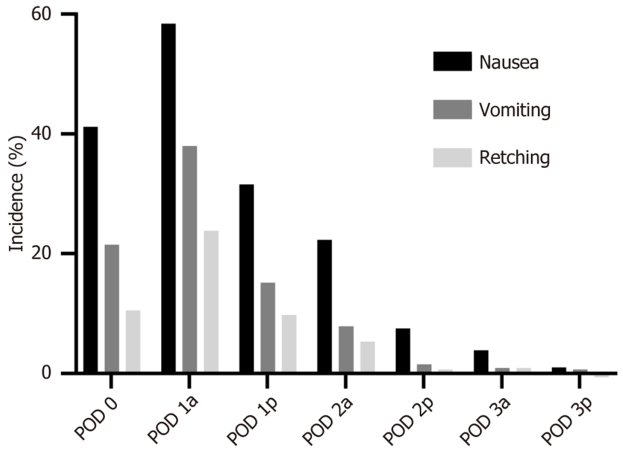

Figure 3 Time course of postoperative nausea, vomiting, and retching. Postoperative day (POD) 0, POD 1a, POD 1p, *etc.*, represent the day of surgery, POD 1 at 8:00, and POD 1 at 20:00, *etc.*, respectively. The suffixes "a" and "p" denote assessment times of 8:00 and 20:00, respectively. POD: Postoperative day.

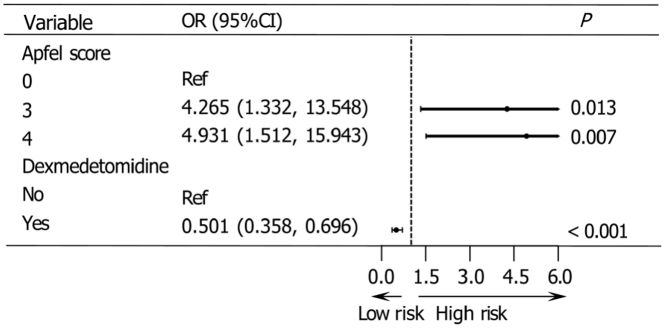

Figure 4 Forest plot of multivariable logistic regression analysis for factors associated with postoperative nausea and vomiting. Multivariable logistic regression with postoperative nausea and vomiting (PONV) as the outcome. Apfel score (reference score = 0) and dexmedetomidine use (reference = no) were independently associated with PONV. Dots represent odds ratios (ORs); horizontal lines indicate 95%CIs. OR > 1 indicates increased risk of PONV; OR < 1 indicates decreased risk of PONV. OR: Odds ratio; Ref: Reference.

may have increased the reported incidence by classifying even minimal symptoms as events. Second, symptom assessments were performed prospectively at seven time points over the first 3 PODs, which allowed us to record both early and later episodes. This approach likely yielded a higher cumulative incidence than studies with shorter follow-up. Third, patients undergoing bariatric surgery are known to carry a particularly high risk of PONV, with reported rates of 60%-80% in previous studies[7,16-19]. Our findings therefore confirmed that PONV remains a persistent clinical problem in this population despite contemporary prophylactic regimens.

The association between dexmedetomidine and a lower risk of PONV was consistent with previous meta-analyses showing antiemetic benefit across different surgical settings, including bariatric surgery[20-23]. Several mechanisms may account for this effect. Dexmedetomidine has sedative and anxiolytic properties, reduces opioid requirements, and exerts sympatholytic effects, all of which may contribute to attenuation of emetic pathways[20-23].

We also observed a strong association between Apfel scores of 3 or 4 and a higher risk of PONV, even though patients in these categories had already received intensified prophylaxis with three or four antiemetic agents. This suggests that current risk-adapted protocols may not fully offset the underlying susceptibility of high-risk patients. From a clinical standpoint, the finding indicates that guideline-based prophylaxis does not eliminate the burden of PONV in this subgroup. Further refinement of antiemetic strategies may therefore be needed, potentially through the addition of other pharmacological agents or the incorporation of non-pharmacological measures such as transcutaneous electrical acupoint stimulation[24,25].

Traditional risk factors such as female sex, prior PONV, and motion sickness history were not retained as independent predictors in the final model[26]. This may be because these variables were already captured within the Apfel score[27]. When the Apfel score itself is included in the analysis, the individual contributions become nonsignificant due to collinearity. Moreover, our institutional practice of adjusting prophylaxis according to the Apfel score may have mitigated the independent effect of these factors[12], as higher-risk patients received more aggressive antiemetic treatment. This interpretation is supported by the fact that the number of antiemetic types administered was also considered in the LASSO selection but did not remain significant in the final multivariable regression. This might reflect the effectiveness of riskadapted prophylaxis in attenuating the impact of individual risk factors.

Sensitivity analyses using moderate-to-severe PONV (INVR > 8) and vomiting only as outcomes confirmed that dexmedetomidine was associated with a lower risk of PONV across different definitions. However, Apfel scores of 3-4 were not significantly associated with moderate-to-severe PONV, suggesting that the risk factors for clinically significant symptoms may differ from those for any PONV. The association between older age and lower risk of moderate-to-severe PONV is consistent with previous reports that age may be inversely associated with PONV severity[5].

Using the INVR, we captured each symptom dimension separately and found that most symptoms were mild to moderate, but a notable proportion of patients still experienced severe symptoms on the morning of POD 1a, including grade III-IV nausea in 16.9% of patients and grade III-IV vomiting in 5.9%. These episodes deserve attention in clinical practice because they are more likely to lead to complications such as dehydration and electrolyte imbalance[3,4].

QoR-15 scores also differed between patients with and without PONV. The median between-group difference was 9 points at 24 hours and 3 points at 48 hours after surgery. Given that the minimal clinically important difference for the QoR-15 is approximately 6 points[28], the 24-hour difference suggests that PONV may have had a meaningful effect on early recovery. That said, QoR-15 was a secondary outcome in this study, and we did not perform formal comparisons across PONV severity groups. These findings should therefore be interpreted cautiously and confirmed in future work.

This study had several limitations. First, it was conducted at a single center, so the results may have been influenced by local practices in anesthesia, surgery, and perioperative care. This may limit the generalizability of the findings to other settings. Multicenter studies will be needed to verify whether the same associations are observed in different clinical environments, and external validation of the predictive model in independent cohorts will also be important. Second, although we used LASSO regression and multivariable adjustment, residual confounding remains a concern. We did not collect detailed preoperative anxiety scores or intraoperative pain control metrics, both of which could affect PONV risk. Other unmeasured factors, such as genetic susceptibility, may also have influenced the results. Third, the use of dexmedetomidine was non-randomized and determined according to the attending anesthesiologist's clinical judgment, which may introduce selection bias. Although we adjusted for a comprehensive set of perioperative variables, the possibility of residual confounding cannot be entirely excluded. Therefore, the observed protective effect of dexmedetomidine should be interpreted with caution, and future randomized controlled trials are warranted to confirm these findings. Fourth, the observational design precludes causal inference. Fifth, because prophylactic antiemetic regimens were administered according to the Apfel score, an inherent correlation exists between these two variables. This collinearity made it difficult to isolate the independent contribution of the Apfel score, since the score reflected not only baseline risk but also the intensity of prophylaxis administered. As a result, the positive association we observed between Apfel score and PONV risk may actually have been underestimated. Sixth, we also performed sensitivity analyses using moderate-to-severe PONV and vomiting-only outcomes to test the robustness of the findings, but we did not examine every possible symptom threshold in a systematic manner. Finally, patient-reported measures such as the INVR remain vulnerable to recall bias. Even though symptoms were assessed prospectively at seven predefined time points over 3 days to shorten the recall window and reduce this problem, some degree of over-reporting or under-reporting could not be excluded. Mild symptoms may have been forgotten, whereas more severe episodes were probably easier to remember, which could have led to some overestimation of symptom severity. Future studies may benefit from real-time symptom recording, including electronic diaries or digital tracking tools, to further reduce this source of bias.

CONCLUSION

In this prospective cohort study, PONV remained common after LSG, affecting 76.3% of patients despite prophylaxis. Intraoperative dexmedetomidine was independently associated with lower odds of PONV, whereas Apfel scores of 3-4 were associated with a markedly higher risk even when prophylaxis was guided by baseline risk. These findings suggested that dexmedetomidine use may help reduce the risk of PONV in patients undergoing LSG, although causal inference cannot be drawn from this observational design. Randomized controlled trials will be needed to confirm a protective effect. The results also support the need for more effective antiemetic strategies in high-risk patients, including additional pharmacological and non-pharmacological approaches.

REFERENCES

1 **Mingrone G**, Panunzi S, De Gaetano A, Guidone C, Iaconelli A, Capristo E, Chamseddine G, Bornstein SR, Rubino F. Metabolic surgery versus conventional medical therapy in patients with type 2 diabetes: 10-year follow-up of an open-label, single-centre, randomised controlled trial. *Lancet* 2021; **397**: 293-304 [*RCA*] [PMID: 33485454 DOI: 10.1016/S0140-6736(20)32649-0] [FullText]

2 **Shan X**, Yang Y, Xiao X, Zhang M, Chen R, Huang Q, Gao Y, Sun X. Enhanced efficacy of aprepitant-based triple prophylaxis in preventing postoperative nausea and vomiting following metabolic bariatric surgery: a single-center, retrospective cohort study. *Front Med (Lausanne)* 2025; **12**: 1481720 [*RCA*] [PMID: 40034380 DOI: 10.3389/fmed.2025.1481720] [FullText] [Full Text(PDF)]

3 **Lim H**, Doo AR, Son JS, Kim JW, Lee KJ, Kim DC, Ko S. Effects of intraoperative single bolus fentanyl administration and remifentanil infusion on postoperative nausea and vomiting. Korean J Anesthesiol 2016; 69: 51-56 [*RCA*] [PMID: 26885302 DOI: 10.4097/kjae.2016.69.1.51] [FullText] [Full Text(PDF)]

4 **Majumdar JR**, Assel MJ, Lang SA, Vickers AJ, Afonso AM. Implementation of an enhanced recovery protocol in patients undergoing mastectomies for breast cancer: an interrupted time-series design. Asia Pac J Oncol Nurs 2022; 9: 100047 [*RCA*] [PMID: 35647224 DOI: 10.1016/j.apjon.2022.02.009] [FullText] [Full Text(PDF)]

5 **Chen P**, Du R, Chang Z, Gao W, Zhao W, Jin L, Zhao Y, Li D, Liu H, Liu X, Dong G. The risk factors of postoperative nausea and vomiting

in patients undergoing laparoscopic sleeve gastrectomy and laparoscopic distal gastrectomy: a propensity score matching analysis. *Sci Rep* 2023; **13**: 7866 [*RCA*] [PMID: 37188833 DOI: 10.1038/s41598-023-34992-1] [FullText] [Full Text(PDF)]

6 **Liao B**, Liao W, Wu X, Liu S, Li Y, Qin R, Yin S. Analysis of influencing factors and construction of prediction model for postoperative nausea and vomiting in patients undergoing laparoscopic sleeve gastrectomy: a single-center retrospective cohort study. *BMC Anesthesiol* 2024; **24**: 131 [*RCA*] [PMID: 38580903 DOI: 10.1186/s12871-024-02502-z] [FullText] [Full Text(PDF)]

7 **Halliday TA**, Sundqvist J, Hultin M, Walldén J. Post-operative nausea and vomiting in bariatric surgery patients: an observational study. *Acta Anaesthesiol Scand* 2017; **61**: 471-479 [*RCA*] [PMID: 28374473 DOI: 10.1111/aas.12884] [FullText]

8 **Suh S**, Helm M, Kindel TL, Goldblatt MI, Gould JC, Higgins RM. The impact of nausea on post-operative outcomes in bariatric surgery patients. *Surg Endosc* 2020; **34**: 3085-3091 [*RCA*] [PMID: 31388805 DOI: 10.1007/s00464-019-07058-5] [FullText]

9 **Zhu J**, Wu L, Chen G, Zhao X, Chen W, Dong Z, Chen X, Hu S, Xie X, Wang C, Wang H, Yang W; Chinese Obesity and Metabolic Surgery Collaborative. Preoperative reflux or regurgitation symptoms are independent predictors of postoperative nausea and vomiting (PONV) in patients undergoing bariatric surgery: a propensity score matching analysis. *Obes Surg* 2022; **32**: 819-828 [*RCA*] [PMID: 35088249 DOI: 10.1007/s11695-021-05859-z] [FullText]

10 **Rhodes VA**, McDaniel RW. The Index of Nausea, Vomiting, and Retching: a new format of the lndex of Nausea and Vomiting. *Oncol Nurs Forum* 1999; **26**: 889-894 [*RCA*] [PMID: 10382187]

11 **Fu MR**, Rhodes V, Xu B. The Chinese translation of the Index of Nausea, Vomiting, and Retching. *Cancer Nurs* 2002; **25**: 134-140 [*RCA*] [PMID: 11984101 DOI: 10.1097/00002820-200204000-00010] [FullText]

12 **Gan TJ**, Belani KG, Bergese S, Chung F, Diemunsch P, Habib AS, Jin Z, Kovac AL, Meyer TA, Urman RD, Apfel CC, Ayad S, Beagley L, Candiotti K, Englesakis M, Hedrick TL, Kranke P, Lee S, Lipman D, Minkowitz HS, Morton J, Philip BK. Fourth Consensus Guidelines for the Management of Postoperative Nausea and Vomiting. *Anesth Analg* 2020; **131**: 411-448 [*RCA*] [PMID: 32467512 DOI: 10.1213/ANE.0000000000004833] [FullText]

13 **Peduzzi P**, Concato J, Kemper E, Holford TR, Feinstein AR. A simulation study of the number of events per variable in logistic regression analysis. *J Clin Epidemiol* 1996; **49**: 1373-1379 [*RCA*] [PMID: 8970487 DOI: 10.1016/s0895-4356(96)00236-3] [FullText]

14 **Taguchi K**, Shinohara H, Kodama H. A longitudinal investigation of the influence of psychological factors on nausea and vomiting in early pregnancy. *Arch Womens Ment Health* 2022; **25**: 995-1004 [*RCA*] [PMID: 36040628 DOI: 10.1007/s00737-022-01262-4] [FullText]

15 **Saadatnia S**, Tiznobaik A, Saber A. The effects of psychological counseling and acupressure based on couple therapy procedure for alleviation of vomiting and nausea in pregnant women in Iran country. *J Complement Integr Med* 2022; **19**: 423-427 [*RCA*] [PMID: 33962493 DOI: 10.1515/jcim-2020-0308] [FullText]

16 **Schumann R**, Ziemann-Gimmel P, Sultana A, Eldawlatly AA, Kothari SN, Shah S, Wadhwa A. Postoperative nausea and vomiting in bariatric surgery: a position statement endorsed by the ASMBS and the ISPCOP. *Surg Obes Relat Dis* 2021; **17**: 1829-1833 [*RCA*] [PMID: 34462224 DOI: 10.1016/j.soard.2021.08.005] [FullText]

17 **Kushner BS**, Freeman D, Sparkman J, Salles A, Eagon JC, Eckhouse SR. Assessment of postoperative nausea and vomiting after bariatric surgery using a validated questionnaire. *Surg Obes Relat Dis* 2020; **16**: 1505-1513 [*RCA*] [PMID: 32665115 DOI: 10.1016/j.soard.2020.05.017] [FullText]

18 **Komann M**, Rabe Y, Lehmann T, Dreiling J, Weinmann C, Kranke P, Meißner W. Operation-specific risk of postoperative nausea: a cross-sectional study comparing 72 procedures. *BMJ Open* 2024; **14**: e077508 [*RCA*] [PMID: 38382957 DOI: 10.1136/bmjopen-2023-077508] [Full Text] [Full Text(PDF)]

19 **Rashad AE**, El Hefnawy E, Elmorshedi M, Abuyousif YA, Salem A, Attia M, El Nakeeb A, Zaid A, Aldossary HM, Mohammed MN. Prevalence, Risk Factors, and Management of Postoperative Nausea and Vomiting After Laparoscopic Sleeve Gastrectomy (a Retrospective Multicentric Study). *Obes Surg* 2023; **33**: 3237-3245 [*RCA*] [PMID: 37624489 DOI: 10.1007/s11695-023-06803-z] [FullText]

20 **Altamimi R**, Alnajjar D, Bin Salamah R, Mandoorah J, Alghamdi A, Aloteibi RE, Almusharaf L, Albabtain B. Dexmedetomidine in Bariatric Surgery: A Systematic Review and Meta-Analysis of Its Effects on Postoperative Pain and Postoperative Nausea and Vomiting. *J Clin Med* 2025; **14**: 679 [*RCA*] [PMID: 39941349 DOI: 10.3390/jcm14030679] [FullText] [Full Text(PDF)]

21 **Subramaniam T**, Tan HY, Tan JH, Pung JW, Htet H. Efficacy of dexmedetomidine in postoperative nausea and vomiting in laparoscopic bariatric surgery: A systematic review and meta-analysis of randomised clinical trials. *Med J Malaysia* 2024; **79**: 626-645 [*RCA*] [PMID: 39352167]

22 **Zhao W**, Li J, Wang N, Wang Z, Zhang M, Zhang H, Liu M, He J, Yu D. Effect of dexmedetomidine on postoperative nausea and vomiting in patients under general anaesthesia: an updated meta-analysis of randomised controlled trials. *BMJ Open* 2023; **13**: e067102 [*RCA*] [PMID: 37527891 DOI: 10.1136/bmjopen-2022-067102] [FullText] [Full Text(PDF)]

23 **Jin S**, Liang DD, Chen C, Zhang M, Wang J. Dexmedetomidine prevent postoperative nausea and vomiting on patients during general anesthesia: A PRISMA-compliant meta analysis of randomized controlled trials. *Medicine (Baltimore)* 2017; **96**: e5770 [*RCA*] [PMID: 28072722 DOI: 10.1097/MD.0000000000005770] [FullText] [Full Text(PDF)]

24 **Zhang H**, Wang S, Yang M, Huang Y, Wang K, Jiang K, Luo F, Hu X, Hong Y, Huang F, Jin S, Qi F, Wang S, Zhang X, Luo H, Guo L, Zhang L, Li J, Chen Y, Qin Z, Chen C, Yang J, Jiang W, Fu N, Ju Y, Li Y, Wang J, Ouyang W, Feng Y. Generic Intravenous Amisulpride (QLG2069) for the Prevention of Postoperative Nausea and Vomiting in Adults: A Phase III, Multicenter, Randomized, Placebo-Controlled Study. *Drug Des Devel Ther* 2025; **19**: 7707-7718 [*RCA*] [PMID: 40923005 DOI: 10.2147/DDDT.S529526] [FullText] [Full Text(PDF)]

25 **Yuan L**, Quan SJ, Li XY, Chen BZ, Huang YB, Zheng H. Transcutaneous electrical acupoint stimulation for preventing postoperative nausea and vomiting after laparoscopic surgery: A meta-analysis. *J Nurs Scholarsh* 2025; **57**: 371-379 [*RCA*] [PMID: 39523483 DOI: 10.1111/jnu.13033] [FullText]

26 **Schlesinger T**, Meybohm P, Kranke P. Postoperative nausea and vomiting: risk factors, prediction tools, and algorithms. *Curr Opin Anaesthesiol* 2023; **36**: 117-123 [*RCA*] [PMID: 36550611 DOI: 10.1097/ACO.0000000000001220] [FullText]

27 **Weilbach C**, Rahe-meyer N, Raymondos K, Weissig A, Scheinichen D, Piepenbrock S. Postoperative nausea and vomiting (PONV): usefulness of the Apfel-score for identification of high risk patients for PONV. *Acta Anaesthesiol Belg* 2006; **57**: 361-363 [*RCA*] [PMID: 17236637]

28 **Myles PS**, Myles DB. An Updated Minimal Clinically Important Difference for the QoR-15 Scale. *Anesthesiology* 2021; **135**: 934-935 [*RCA*] [PMID: 34543410 DOI: 10.1097/ALN.0000000000003977] [FullText]

FOOTNOTES

Specialty type: Gastroenterology and hepatology

Country of origin: China

Author contributions: Yang GY and Zhang XF wrote the original draft as co-first authors; Yang GY, Zhang XF, Zhao X, Qu H, Zhou P, Wang Y, Tu SM, and Xia ZY participated in the formal analysis and investigation; Yang GY, Zhang XF, and Chu QJ designed the study; Zhang XF and Chu QJ developed the methodology; Yang GY, Zhang XF, Zhao X, Qu H, Zhou P, Wang Y, Tu SM, Xia ZY, and Chu QJ participated in the review and editing; all of the authors read and approved the final version of the manuscript to be published.

AI contribution statement: The authors used DeepSeek. This tool was employed for language polishing – to improve clarity, grammar, and phrasing – in both the response-to-reviewers letter and the main manuscript. No part of the main manuscript text – abstract, introduction, materials and methods, results, discussion, or conclusion – was generated by AI.

Institutional review board statement: This single-center prospective cohort study was approved by the Medical Ethics Committee of Zhengzhou Central Hospital Affiliated to Zhengzhou University (approval No. 202207) on January 10, 2022.

Clinical trial registration statement: Not applicable.

Informed consent statement: All participants provided informed consent.

Conflict-of-interest statement: All authors declare no conflict of interest in publishing the manuscript.

Data sharing statement: The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

CONSORT 2010 statement: The authors have read the CONSORT 2010 Statement, and the manuscript was prepared and revised according to the CONSORT 2010 Statement.

S-Editor: Luo ML
L-Editor: A
P-Editor: Zhang YL

Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA
Telephone: +1-925-3991568
E-mail: office@baishideng.com
Help Desk: https://www.f6publishing.com/helpdesk
https://www.wjgnet.com

© 2026 Baishideng Publishing Group Inc. All rights reserved.