

Supplementary Materials

Enteral nutrition intolerance: Evidence mapping of definitions and assessment practices to inform future gastric cancer–specific assessment tool development

Wei Fu BS RN^{1,2}, Qinchen Xu MS RN^{1,2}, Rong Zhang BS RN^{1,2}, Chunjuan Liu MS RN^{1,2}, Xiaodong Wang MD³

¹*Gastric Cancer Center, West China Hospital, Sichuan University, Chengdu, China*

²*West China School of Nursing, Sichuan University, Chengdu, China*

³*Division of Gastrointestinal Surgery, Department of General Surgery, West China Hospital, Sichuan University, Chengdu, China*

Corresponding Author:

Chunjuan Liu, Gastric Cancer Center, West China Hospital, Sichuan University, No. 37 Guoxue Lane, Wuhou District, Chengdu, Sichuan 610041, China

Tel: +86-189-8060-5336

Email: liuchunjuan2002@scu.edu.cn

Manuscript received 09 February 2026. Initial review completed 20 May 2026. Revision accepted 13 July 2026.

doi: 10.6133/apjcn.202610_35(5).0002

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Farah Hanim A et al ²⁵ . 2021	MEDICINE AND HEALTH	ICU	RCT	146	Unreported	24-48 h
Guangxuan Lv et al ²⁶ . 2023	FRONTIERS IN NUTRITION	ICU	Cohort study	83	Multiple	24-48 h
Franziska Tedeschi-Jockers et al ²⁷ . 2021	EUROPEAN JOURNAL OF CLINICAL NUTRITION	ICU	Cohort study	25	Nasogastric tubes	24-48 h
Sirak Petros et al ²⁸ . 2016	JOURNAL OF PARENTERAL AND ENTERAL NUTRITION	ICU	RCT	100	Unreported	24 h
Junjian Yu et al ²⁹ . 2024	WORLD JOURNAL OF SURGICAL ONCOLOGY	Gastric Cancer	RCT	112	Oral and tube	24 h
Cristian Merchan et al ³⁰ . 2017	JOURNAL OF INTENSIVE CARE MEDICINE	Sepsis	Cohort study	120	Multiple	Unreported
Khodayar oshvandi et al ³¹ . 2020	FAMILY MEDICINE & PRIMARY CARE REVIEW	ICU	RCT	63	Nasogastric tubes	24 h
Luping Wang et al ³² . 2022	NUTRIENTS	ICU	Cohort study	210	Unreported	24-48 h
Eman Mohamed Elmokadem et al ³³ . 2024	FRONTIERS IN PHARMACOLOGY	ICU	RCT	70	Nasogastric tubes	Unreported
Chang-Jie Ren et al ³⁴ . 2021	CHINESE MEDICAL JOURNAL	ICU	RCT	62	Nasogastric tubes	Unreported

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Farah Hanim A et al ²⁵ . 2021	GRV	8.2 vs. 13.7	Caloric measuring tools	https://doi.org/10.17576/MH.2021.1602.15
Guangxuan Lv et al ²⁶ . 2023	Gastrointestinal symptom/GRV	100	Drug improve ENI	10.3389/fnut.2023.1244517
Franziska Tedeschi-Jockers et al ²⁷ . 2021	Gastrointestinal symptom/GRV	53.3 vs. 33.3	EN formula	https://doi.org/10.1038/s41430-021-00956-9
Sirak Petros et al ²⁸ . 2016	GRV	22.4	EN strategy	10.1177/0148607114528980
Junjian Yu et al ²⁹ . 2024	Gastrointestinal symptom	8.9 vs. 3.5	EN strategy	https://doi.org/10.1186/s12957-024-03348-y
Cristian Merchan et al ³⁰ . 2017	GRV/Gastrointestinal symptom/Imaging examinations	38	Drug improve ENI	10.1177/0885066616656799
Khodayar oshvandi et al ³¹ . 2020	Gastrointestinal symptom/GRV	42.9 vs. 34.9 vs. 41.3	EN strategy	https://doi.org/10.5114/fmpcr.2020.95322
Luping Wang et al ³² . 2022	EN interruption	37.8 vs. 67.6 vs. 81.0 vs. 76.5	Drug improve ENI	https://doi.org/10.3390/nu14245393
Eman Mohamed Elmokadem et al ³³ . 2024	Gastrointestinal symptom/GRV	Unreported	Drug improve ENI	10.3389/fphar.2024.1413246
Chang-Jie Ren et al ³⁴ . 2021	Gastrointestinal symptom/GRV	12.5 vs. 6.6	EN strategy	10.1097/CM9.0000000000001684

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47) (cont.)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Eman Mohamed Elmokadem et al ³⁵ . 2021	BMC GASTROENTEROLOGY	ICU	RCT	76	Nasogastric tubes	Unreported
Yingying Xu et al ³⁶ . 2024	FRONTIERS IN NUTRITION	Gastric Cancer	Cohort study	470	Nasoenteric tubes	24 h
Hyun-Jun Park et al ³⁷ . 2025	ACUTE AND CRITICAL CARE	ICU	Cohort study	94	Unreported	Unreported
Feng-Jun He et al ³⁸ . 2022	NUTRIENTS	Gastric Cancer	RCT	67	Nasoenteric tubes	24 h
Yajuan Xiao et al ³⁹ . 2023	SAUDI JOURNAL OF MEDICINE & MEDICAL SCIENCES	ICU	Cohort study	200	Nasogastric and nasoenteric tubes	Multiple
Gaimei Wang et al ⁴⁰ . 2025	FRONTIERS IN NUTRITION	ICU	Cohort study	487	Multiple	Unreported
Jiajia Lin et al ⁴¹ . 2022	BMC GASTROENTEROLOGY	Pancreatitis	Cohort study	93	Multiple	24-48 h
Li Zhang et al ⁴² . 2021	CLINICAL NUTRITION	Abdominal surgery	RCT	411	Oral and tube	24 h
Fengmei Guo et al ⁴³ . 2019	BRITISH JOURNAL OF NUTRITION	Burn injury	Cohort study	100	Nasogastric and nasoenteric tubes	72 h
Najmeh Seifi et al ⁴⁴ . 2022	TRIALS	ICU	RCT	42	Nasogastric tubes	24-48 h

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Eman Mohamed Elmokadem et al ³⁵ . 2021	Gastrointestinal symptom/GRV	11	Drug improve ENI	10.1186/s12876-021-01712-w
Yingying Xu et al ³⁶ . 2024	Energy target achievement/Gastrointestinal symptom/GRV	44.0	Predictive model	10.3389/fnut.2024.1480390
Hyun-Jun Park et al ³⁷ . 2025	Gastrointestinal symptom/Imaging examinations	81.9	The impact of ENI on prognosis	10.4266/acc.000700
Feng-Jun He et al ³⁸ . 2022	EN interruption	25.8 vs. 31.4	EN strategy	10.3390/nu14071472
Yajuan Xiao et al ³⁹ . 2023	GRV/Gastrointestinal symptom led to interruption of EN/Energy target achievement	58.5	An investigation into the incidence and risk factors for ENI	10.4103/sjmms.sjmms_384_22
Gaimei Wang et al ⁴⁰ . 2025	Energy target achievement/Gastrointestinal symptom led to interruption of EN/GRV	35.9	Predictive model	10.3389/fnut.2025.1600319
Jiajia Lin et al ⁴¹ . 2022	Energy target achievement/Gastrointestinal symptom/GRV	25.8	An investigation into the incidence and risk factors for ENI	https://doi.org/10.1186/s12876-022-02403-w
Li Zhang et al ⁴² . 2021	Gastrointestinal symptom	29.1 vs. 15.5	EN strategy	https://doi.org/10.1016/j.clnu.2021.10.014
Fengmei Guo et al ⁴³ . 2019	Gastrointestinal symptom/GRV	32	An investigation into the clinical outcomes of burn patients by nutritional support	10.1017/S0007114519000217
Najmeh Seifi et al ⁴⁴ . 2022	Gastrointestinal symptom/GRV	Unreported	Drug improve ENI	https://doi.org/10.1186/s13063-022-06668-0

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47) (cont.)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Jianyi Yin et al ⁴⁵ . 2015	EUROPEAN JOURNAL OF TRAUMA AND EMERGENCY SURGERY	ICU	Cohort study	88	Multiple	Multiple
Xue-Mei Lu et al ⁴⁶ . 2022	WORLD JOURNAL OF GASTROINTESTINAL SURGERY	ICU	Cohort study	203	Multiple	Multiple
Kailun Wang et al ⁴⁷ . 2017	JOURNAL OF PARENTERAL AND ENTERAL NUTRITION	All hospitalized patients receiving enteral nutrition tube feeding	Cohort study	754	Multiple	Multiple
Xiaohua Cao et al ⁴⁸ . 2025	FRONTIERS IN NUTRITION	ICU	Cohort study	144	Nasogastric and nasoenteric tubes	Multiple
Zhi Mao et al ⁴⁹ . 2020	ANNALS OF TRANSLATIONAL MEDICINE	ICU	Cohort study	132	Nasogastric and nasoenteric tubes	Multiple
Farveh Yahyapoor et al ⁵⁰ . 2021	JOURNAL OF RESEARCH IN MEDICAL SCIENCES	ICU	Cross-sectional study	245	Nasogastric and nasoenteric tubes	Unreported
Yibo Pan et al ⁵¹ . 2025	MEDICINE	Traumatic brain injury	Cohort study	302	Nasogastric and nasoenteric tubes	Unreported
Dickerson RN et al ⁵² . 2023	NUTRITION IN CLINICAL PRACTICE	ICU	Cohort study	47	Multiple	Multiple

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Jianyi Yin et al ⁴⁵ . 2015	GRV/Gastrointestinal symptom/EN interruption	53.6 vs. 43.3	EN strategy	10.1007/s00068-014-0425-4
Xue-Mei Lu et al ⁴⁶ . 2022	EN interruption	37.9	Predictive model	10.4240/wjgs.v14.i12.1363
Kailun Wang et al ⁴⁷ . 2017	Gastrointestinal symptom lead to interruption of EN/drug intervention	33	An investigation into the incidence and risk factors for ENI	10.1177/0148607115627142
Xiaohua Cao et al ⁴⁸ . 2025	Gastrointestinal symptom/GRV/Energy target achievement/EN cessation	39.6	Predictive model	10.3389/fnut.2025.1667046
Zhi Mao et al ⁴⁹ . 2020	GRV/Gastrointestinal symptom/Imaging examinations	26.5	Drug improve ENI	10.21037/atm-20-6317
Farveh Yahyapoor et al ⁵⁰ . 2021	Gastrointestinal symptom/GRV	66.1	An investigation into the incidence and risk factors for ENI	10.4103/jrms.JRMS_689_20
Yibo Pan et al ⁵¹ . 2025	Gastrointestinal symptom/EN interruption or cessation/Energy target achievement	50.7 vs. 56.1	Predictive model	http://dx.doi.org/10.1097/MD.00000000000042993
Dickerson RN et al ⁵² . 2023	Drug intervention/EN cessation/GRV	21	Drug improve ENI	10.1002/ncp.10911

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47) (cont.)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Rong Yuan et al ⁵³ . 2024	FRONTIERS IN NUTRITION	ICU	Cohort study	300	Nasogastric and nasoenteric tubes	24-48 h
Mengxuan Huang et al ⁵⁴ . 2025	SUPPORTIVE CARE IN CANCER	Laryngeal cancer surgery	RCT	100	Nasogastric tubes	24 h
Kunlin Hu et al ⁵⁵ . 2021	SAUDI JOURNAL OF GASTROENTEROLOGY	Sepsis	Cohort study	195	Nasogastric and nasoenteric tubes	Unreported
Liqiang Du et al ⁵⁶ . 2021	AMERICAN JOURNAL OF TRANSLATIONAL RESEARCH	Abdominal surgery	RCT	164	Nasogastric tubes	24 h
Masoume Malekolkottab et al ⁵⁷ . 2017	JOURNAL OF COMPARATIVE EFFECTIVENESS RESEARCH	ICU	RCT	40	Nasogastric tubes	Unreported
Li-zhu Wang et al ⁵⁸ . 2024	CURRENT MEDICAL SCIENCE	Sepsis	Cohort study	859	Multiple	Unreported
Lijie Liu et al ⁵⁹ . 2025	JOURNAL OF CLINICAL NURSING	ICU	Cohort study	471	Nasogastric and nasoenteric tubes	24-48 h
Ivan Osuna-Padilla et al ⁶⁰ . 2021	CLINICAL NUTRITION ESPEN	ICU	Cohort study	52	Nasogastric tubes	72 h

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Rong Yuan et al ⁵³ . 2024	Gastrointestinal symptom/GRV	71	Predictive model	10.3389/fnut.2024.1481279
Mengxuan Huang et al ⁵⁴ . 2025	Gastrointestinal symptom/energy target achievement	50.0 vs. 71.4	Traditional Chinese Medicine Diet therapy to improve ENI	https://doi.org/10.1007/s00520-025-09867-y
Kunlin Hu et al ⁵⁵ . 2021	Gastrointestinal symptom/GRV/Intra-abdominal pressure	44.1	Predictive model	10.4103/sjg.sjg_286_21
Liqiang Du et al ⁵⁶ . 2021	Gastrointestinal symptom/GRV	78.0 vs. 63.4	The impact of intra-abdominal pressure monitoring on early enteral nutrition therapy after abdominal surgery	www.ajtr.org/ISSN:1943-8141/AJTR0129984
Masoume Malekolkottab et al ⁵⁷ . 2017	Gastrointestinal symptom/GRV	5-20	Drug improve ENI	10.2217/cer-2016-0067
Li-zhu Wang et al ⁵⁸ . 2024	Gastrointestinal symptom/GRV	33.5	An investigation into the incidence and risk factors for ENI	https://doi.org/10.1007/s11596-024-2849-3
Lijie Liu et al ⁵⁹ . 2025	Gastrointestinal symptom/EN interruption/cessation	35.7	Predictive model	https://doi.org/10.1111/jocn.17660
Ivan Osuna-Padilla et al ⁶⁰ . 2021	Gastrointestinal symptom/GRV	32.4	An investigation into the incidence and risk factors for ENI	https://doi.org/10.1016/j.clnesp.2021.02.015

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47) (cont.)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Yuyu Duan et al ⁶¹ . 2023	TOPICS IN CLINICAL NUTRITION	Liver transplant	Cohort study	320	Nasogastric and nasoenteric tubes	Multiple
Hui Li et al ⁶² . 2019	SAUDI JOURNAL OF GASTROENTEROLOGY	Pancreatitis	Cohort study	568	Nasogastric and nasoenteric tubes	Unreported
Jia-Kui Sun et al ⁶³ . 2021	WORLD JOURNAL OF GASTROENTEROLOGY	Sepsis	RCT	54	Nasogastric and nasoenteric tubes	24-48 h
Ge Yu et al ⁶⁴ . 2023	CLINICAL NUTRITION ESPEN	ICU	Cohort study	91	Nasogastric tubes	24-48 h
Chunfang Qiu et al ⁶⁵ . 2017	JOURNAL OF PARENTERAL AND ENTERAL NUTRITION	ICU	RCT	144	Nasogastric and nasoenteric tubes	24-48 h
Tao Gao et al ⁶⁶ . 2019	CRITICAL CARE	ICU	Cohort study	116	Unreported	24-48 h
Ting Chen et al ⁶⁷ . 2021	JOURNAL OF PARENTERAL AND ENTERAL NUTRITION	Pancreatitis	RCT	46	Nasoenteric tubes	24 h
Kunlin Hu et al ⁶⁸ . 2025	CLINICS AND RESEARCH IN HEPATOLOGY AND GASTROENTEROLOGY	ICU	Cohort study	60	Nasogastric tubes	Unreported

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Yuyu Duan et al ⁶¹ . 2023	energy target achievement/Gastrointestinal symptoms led to cessation of EN	50.3	An investigation into the incidence and risk factors for ENI	10.1097/TIN.0000000000000305
Hui Li et al ⁶² . 2019	Energy target achievement/Gastrointestinal symptoms led to cessation of EN	32.4	An investigation into the incidence and risk factors for ENI	10.4103/sjg.SJG_550_18
Jia-Kui Sun et al ⁶³ . 2021	Gastrointestinal symptom	11.8 vs. 22.2 vs. 52.6	EN formula	10.3748/wjg.v27.i29.4900
Ge Yu et al ⁶⁴ . 2023	GRV/Gastrointestinal symptom/energy target achievement	62.6	Predicting ENI via transabdominal gastrointestinal ultrasound	https://doi.org/10.1016/j.clnesp.2023.02.010
Chunfang Qiu et al ⁶⁵ . 2017	Gastrointestinal symptom/GRV	42.3	EN formula	10.1177/0148607115601858
Tao Gao et al ⁶⁶ . 2019	Gastrointestinal symptom/EN interruption	35.3 vs. 64.7	Ultrasound assessment of AGI	https://doi.org/10.1186/s13054-019-2645-9
Ting Chen et al ⁶⁷ . 2021	Gastrointestinal symptoms cause EN to slow down/EN cessation	59.1 vs. 25.0	EN formula	10.1002/jpen.1816
Kunlin Hu et al ⁶⁸ . 2025	Gastrointestinal symptom/GRV/Intra-abdominal pressure/Energy target achievement	50	Predictive model	https://doi.org/10.1016/j.clinre.2025.102731

Supplementary Table 1. Characteristics and operational ENI definitions of included studies (n = 47) (cont.)

Study	Journal	Setting/population	Design	Sample size	Feeding route	EN initiation
Rong Yuan et al ⁶⁹ . 2025	EUROPEAN JOURNAL OF CLINICAL NUTRITION	ICU	Cohort study	440	Nasoenteric tubes	Unreported
Youquan Wang et al ⁷⁰ . 2023	CLINICAL NUTRITION	ICU	Cohort study	771	Nasoenteric tubes	Multiple
Yanjuan Lin et al ⁷¹ . 2021	BRITISH JOURNAL OF NUTRITION	Coronary artery bypass graft	Cohort study	237	Oral and tube	24-48 h

Study	ENI definition (operational)	ENI incidence rate (%)	Study focus/outcomes	DOI/URL
Rong Yuan et al ⁶⁹ . 2025	Gastrointestinal symptom/GRV/Gastrointestinal bleeding	71	Predictive model	https://doi.org/10.1038/s41430-025-01683-1
Youquan Wang et al ⁷⁰ . 2023	EN interruption	49.0 vs. 51.7	Predictive model	https://doi.org/10.1016/j.clnu.2023.10.003
Yanjuan Lin et al ⁷¹ . 2021	Gastrointestinal symptom/GRV	64.1	The impact of ENI on prognosis	10.1017/S0007114521000167

AGI, acute gastrointestinal injury; DOI, digital object identifier; EN, enteral nutrition; ENI, enteral nutrition intolerance; GRV, gastric residual volume; ICU, intensive care unit; RCT, randomized controlled trial. Incidence values separated by “vs.” correspond to the study groups in the order reported in the original article. “Unreported” indicates that the information was not reported in the original study.

References

25. Farah Hanim A, Saw Kian C, Nadia MN, RUFINAH T, WAN RAHIZA WM. A Comparison between Continuous Indirect Calorimetry and Single Weight-Based Formula in Estimating Resting Energy Expenditure in Nutritional Therapy: A Prospective Randomized Controlled Study in Critically Ill Patients. *Medicine & Health (Universiti Kebangsaan Malaysia)*. 2021;16:207-15. doi:10.17576/MH.2021.1602.15
26. Lv G, Zhang T, Wang L, et al. Prediction of prokinetic agents in critically ill patients with feeding intolerance: a prospective observational clinical study. *Front Nutr*. 2023;10:1244517. Published 2023. doi:10.3389/fnut.2023.1244517
27. Tedeschi-Jockers F, Reinhold S, Hollinger A, et al. A new high protein-to-energy enteral formula with a whey protein hydrolysate to achieve protein targets in critically ill patients: a prospective observational tolerability study. *Eur J Clin Nutr*. 2022;76:419-27. doi:10.1038/s41430-021-00956-9
28. Petros S, Horbach M, Seidel F, Weidhase L. Hypocaloric vs Normocaloric Nutrition in Critically Ill Patients: A Prospective Randomized Pilot Trial. *JPEN J Parenter Enteral Nutr*. 2016;40:242-9. doi:10.1177/0148607114528980
29. Yu J, Yuan A, Liu Q, et al. Effect of preoperative immunonutrition on postoperative short-term clinical outcomes in patients with gastric cancer cachexia: a prospective randomized controlled trial. *World J Surg Oncol*. 2024;22:101. doi:10.1186/s12957-024-03348-y
30. Merchan C, Altshuler D, Aberle C, Papadopoulos J, Schwartz D. Tolerability of Enteral Nutrition in Mechanically Ventilated Patients With Septic Shock Who Require Vasopressors. *J Intensive Care Med*. 2017;32:540-6. doi:10.1177/0885066616656799
31. Oshvandi K, Dehvan F, Falahinia G, Taher A, Soltanian A, Sadeghi-Hedayat S. The effects of nasogastric feeding at different intervals on feeding intolerance in ICU patients: a single-blind randomized controlled trial. *Fam Med Prim Care Rev*. 2020; 22: 140–5. doi:10.5114/fmpcr.2020.95322
32. Wang L, Zhang T, Yao H, et al. Association of Vasopressors Dose Trajectories with Enteral Nutrition Tolerance in Patients with Shock: A Prospective Observational Study. *Nutrients*. 2022;14:5393. doi:10.3390/nu14245393
33. Elmokadem EM, Abou El Fadl DK, Eissa N, Bassiouny AM, Hanna Samy AE, El Said NO. Comparison of enteral prucalopride versus intravenous metoclopramide for feeding intolerance in patients with critical illness: a randomized double-blinded study. *Front Pharmacol*. 2024;15:1413246. doi:10.3389/fphar.2024.1413246

34. Ren CJ, Yao B, Tuo M, Lin H, Wan XY, Pang XF. Comparison of sequential feeding and continuous feeding on the blood glucose of critically ill patients: a noninferiority randomized controlled trial. *Chin Med J (Engl)*. 2021;134:1695-700. doi:10.1097/CM9.0000000000001684
35. Elmokadem EM, El Borolossy RM, Bassiouny AM, Hanna MG, Darweesh EAG, Sabri NA. The efficacy and safety of itopride in feeding intolerance of critically ill patients receiving enteral nutrition: a randomized, double-blind study. *BMC Gastroenterol*. 2021;21:126. doi:10.1186/s12876-021-01712-w
36. Xu Y, Hu Q, Pei D, et al. Construction of a preoperative emotional state and postoperative intra-abdominal pressure based prediction model for early enteral feeding intolerance in postoperative patients with gastric cancer. *Front Nutr*. 2024;11:1480390. doi:10.3389/fnut.2024.1480390
37. Park HJ, Ahn YH, Lee HY, Lee SM, Lee J. The impact of enteral feeding intolerance on the prognosis of patients with septic shock in South Korea. *Acute Crit Care*. 2025;40:304-12. doi:10.4266/acc.000700
38. He FJ, Wang MJ, Yang K, et al. Effects of Preoperative Oral Nutritional Supplements on Improving Postoperative Early Enteral Feeding Intolerance and Short-Term Prognosis for Gastric Cancer: A Prospective, Single-Center, Single-Blind, Randomized Controlled Trial. *Nutrients*. 2022;14:1472. doi:10.3390/nu14071472
39. Xiao Y, Xu L. Prevalence and Risk Factors of Enteral Feeding Intolerance in Critically Ill Patients and the Effectiveness of Preventive Treatments: A Prospective Study. *Saudi J Med Med Sci*. 2023;11:135-42. doi:10.4103/sjmms.sjmms_384_22
40. Wang G, Lu C, Solomon OM, et al. Construction and evaluation of a machine learning-based predictive model for enteral nutrition feeding intolerance risk in ICU patients. *Front Nutr*. 2025;12:1600319. doi:10.3389/fnut.2025.1600319
41. Lin J, Lv C, Wu C, et al. Incidence and risk factors of nasogastric feeding intolerance in moderately-severe to severe acute pancreatitis. *BMC Gastroenterol*. 2022;22:327. doi:10.1186/s12876-022-02403-w
42. Zhang L, Liu Y, Gao X, et al. Immediate vs. gradual advancement to goal of enteral nutrition after elective abdominal surgery: A multicenter non-inferiority randomized trial. *Clin Nutr*. 2021;40:5802-11. doi:10.1016/j.clnu.2021.10.014
43. Guo F, Zhou H, Wu J, et al. A prospective observation on nutrition support in adult patients with severe burns. *Br J Nutr*. 2019;121:974-81. doi:10.1017/S0007114519000217
44. Seifi N, Rezvani R, Sedaghat A, Nematy M, Khadem-Rezaian M, Safarian M. The effects of synbiotic supplementation on enteral feeding tolerance, protein homeostasis, and muscle wasting of critically ill adult patients: a randomized controlled trial. *Trials*. 2022;23:846. doi:10.1186/s13063-022-06668-0
45. Yin J, Wang J, Zhang S, et al. Early versus delayed enteral feeding in patients with abdominal trauma: a retrospective cohort study. *Eur J Trauma Emerg Surg*. 2015;41:99-105. doi:10.1007/s00068-014-0425-4
46. Lu XM, Jia DS, Wang R, Yang Q, Jin SS, Chen L. Development of a prediction model for enteral feeding intolerance in intensive care unit patients: A prospective cohort study. *World J Gastrointest Surg*. 2022;14:1363-74. doi:10.4240/wjgs.v14.i12.1363
47. Wang K, McIlroy K, Plank LD, Petrov MS, Windsor JA. Prevalence, Outcomes, and Management of Enteral Tube Feeding Intolerance: A Retrospective Cohort Study in a Tertiary Center. *JPEN J Parenter Enteral Nutr*. 2017;41:959-67. doi:10.1177/0148607115627142
48. Cao X, Wang H, Song Y, et al. Development and evaluation of a risk prediction model for enteral nutrition feeding intolerance in intensive care units. *Front Nutr*. 2025;12:1667046. doi:10.3389/fnut.2025.1667046
49. Mao Z, Liu G, Yu Q, et al. Association between serum lactate levels and enteral feeding intolerance in septic patients treated with vasopressors: a retrospective cohort study. *Ann Transl Med*. 2020;8:1240. doi:10.21037/atm-20-6317
50. Yahyapoor F, Dehnavi Z, Askari G, et al. The prevalence and possible causes of enteral tube feeding intolerance in critically ill patients: A cross-sectional study. *J Res Med Sci*. 2021;26:60. doi:10.4103/jrms.JRMS_689_20
51. Pan Y, Min C, Li J, et al. Development and validation of a dynamic nomogram for predicting enteral nutrition feeding intolerance in patients with severe traumatic brain injury: An external validation study. *Medicine (Baltimore)*. 2025;104:e42993. doi:10.1097/MD.00000000000042993
52. Dickerson RN, Corley CE, Holmes WL, Byerly S, Filiberto DM, Fischer PE. Gastric feeding intolerance in critically ill patients during sustained pharmacologic neuromuscular blockade. *Nutr Clin Pract*. 2023;38:350-9. doi:10.1002/ncp.10911
53. Yuan R, Liu L, Mi J, Li X, Yang F, Mao S. Development and validation of a risk prediction model for feeding intolerance in neurocritical patients with enteral nutrition. *Front Nutr*. 2024;11:1481279. doi:10.3389/fnut.2024.1481279
54. Huang M, Cao J, Jiang J, Shen H, Mi J. Effect of a self-made dietary therapy formula on the improvement of enteral feeding intolerance in patients with laryngeal cancer after surgery: A randomized controlled trial. *Support Care Cancer*. 2025;33:827. doi:10.1007/s00520-025-09867-y
55. Hu K, Deng XL, Han L, Xiang S, Xiong B, Pinhu L. Development and validation of a predictive model for feeding intolerance in intensive care unit patients with sepsis. *Saudi J Gastroenterol*. 2022;28:32-8. doi:10.4103/sjg.sjg_286_21
56. Du L, Zhao Y, Yin C, Liu S, Cui Z, Zhang M. Application of intra-abdominal pressure monitoring in early enteral nutrition after abdominal surgery. *Am J Transl Res*. 2021;13:7140-7.
57. Malekolkottab M, Khalili H, Mohammadi M, Ramezani M, Nourian A. Metoclopramide as intermittent and continuous infusions in critically ill patients: a pilot randomized clinical trial. *J Comp Eff Res*. 2017;6:127-36. doi:10.2217/cer-2016-0067

58. Wang LZ, Xiang Y, Li Q, et al. Risk Factors of Enteral Nutrition Intolerance in Septic Patients: A Case-control Study. *Curr Med Sci.* 2024;44:328-32. doi:10.1007/s11596-024-2849-3
59. Liu L, Li J, Hu L, Cai X, Li X, Bai Y. Development and Validation of a Prediction Model for Enteral Feeding Intolerance in Critical Ill Patients: A Retrospective Cohort Study. *J Clin Nurs.* 2025;34:2336-47. doi:10.1111/jocn.17660
60. Osuna-Padilla I, Rodríguez-Moguel NC, Aguilar-Vargas A, Rodríguez-Llamazares S. Safety and tolerance of enteral nutrition in COVID-19 critically ill patients, a retrospective study. *Clin Nutr ESPEN.* 2021;43:495-500. doi:10.1016/j.clnesp.2021.02.015
61. Yuyu D, Qing Z, Wen D, Ma Y, Huang L, Hu A. Incidence and Risk Factors of Feeding Intolerance in Adult Patients Given Enteral Nutrition Therapy After Liver Transplant: A Retrospective Study. *Topics in Clinical Nutrition.* 2023;38:47-58. doi: 10.1097/TIN.0000000000000305
62. Li H, Yang Z, Tian F. Risk factors associated with intolerance to enteral nutrition in moderately severe acute pancreatitis: A retrospective study of 568 patients. *Saudi J Gastroenterol.* 2019;25:362-8. doi:10.4103/sjg.SJG_550_18
63. Sun JK, Nie S, Chen YM, et al. Effects of permissive hypocaloric vs standard enteral feeding on gastrointestinal function and outcomes in sepsis. *World J Gastroenterol.* 2021;27:4900-12. doi:10.3748/wjg.v27.i29.4900
64. Yu G, Jin S, Wang R, Lu J, Wang R. Transabdominal gastro-intestinal ultrasonography (TGIU) for predicting feeding intolerance in critically ill patients: A prospective observational study. *Clin Nutr ESPEN.* 2023;55:76-82. doi:10.1016/j.clnesp.2023.02.010
65. Qiu C, Chen C, Zhang W, et al. Fat-Modified Enteral Formula Improves Feeding Tolerance in Critically Ill Patients: A Multicenter, Single-Blind, Randomized Controlled Trial. *JPEN J Parenter Enteral Nutr.* 2017;41:785-95. doi:10.1177/0148607115601858
66. Gao T, Cheng MH, Xi FC, et al. Predictive value of transabdominal intestinal sonography in critically ill patients: a prospective observational study. *Crit Care.* 2019;23:378. doi:10.1186/s13054-019-2645-9
67. Chen T, Ma Y, Xu L, Sun C, Xu H, Zhu J. Soluble Dietary Fiber Reduces Feeding Intolerance in Severe Acute Pancreatitis: A Randomized Study. *JPEN J Parenter Enteral Nutr.* 2021;45:125-35. doi:10.1002/jpen.1816
68. Hu K, Xiang S, Pang J, Huang B, Xiong B. Metabolomic biomarkers enhance prediction of feeding intolerance in ICU septic patients. *Clin Res Hepatol Gastroenterol.* 2025;49:102731. doi:10.1016/j.clinre.2025.102731
69. Yuan R, Liu L, Mi J, Li X, Yang F, Mao S. Early prediction of enteral nutrition feeding intolerance risk in neurocritical patients and development of a simplified risk scoring tables. *Eur J Clin Nutr.* 2026;80:159-67. doi: 10.1038/s41430-025-01683-1.
70. Wang Y, Li Y, Wang H, et al. Development and validation of a nomogram for predicting enteral feeding intolerance in critically ill patients (NOFI): Mixed retrospective and prospective cohort study. *Clin Nutr.* 2023;42:2293-301. doi:10.1016/j.clnu.2023.10.003
71. Lin Y, Chen M, Peng Y, Chen Q, Li S, Chen L. Feeding intolerance and risk of poor outcome in patients undergoing cardiopulmonary bypass surgery. *Br J Nutr.* 2021;126:1340-6. doi:10.1017/S0007114521000167