Supplementary material

Supplementary Material: PubMed Search Strategy

Database: PubMed (MEDLINE)

Search Date: May 1, 2026

Language Restriction: English

Date Restriction: Up to May 1, 2026

Concept 1: Cholangiocarcinoma (Disease)

1 "Cholangiocarcinoma"[Mesh]

2 "cholangiocarcinoma*"[Title/Abstract]

3 "bile duct neoplasm*"[Title/Abstract]

4 "bile duct cancer*"[Title/Abstract]

5 "biliary tract neoplasm*"[Title/Abstract]

6 "biliary tract cancer*"[Title/Abstract]

7 "cholangiocellular carcinoma*"[Title/Abstract]

8 1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7

Concept 2: Neutrophil-to-Lymphocyte Ratio (Biomarker 1)

9 "Neutrophil-to-Lymphocyte Ratio"[Mesh] OR "Neutrophils"[Mesh] OR "Lymphocytes"[Mesh]

10 "neutrophil-to-lymphocyte ratio"[Title/Abstract]

11 "neutrophil to lymphocyte ratio"[Title/Abstract]

12 "neutrophil-lymphocyte ratio"[Title/Abstract]

13 "neutrophil lymphocyte ratio"[Title/Abstract]

14 "NLR"[Title/Abstract]

15 9 OR 10 OR 11 OR 12 OR 13 OR 14

Concept 3: Platelet-to-Lymphocyte Ratio (Biomarker 2)

16 "Blood Platelets"[Mesh]

17 "platelet-to-lymphocyte ratio"[Title/Abstract]

18 "platelet to lymphocyte ratio"[Title/Abstract]

19 "platelet-lymphocyte ratio"[Title/Abstract]

20 "platelet lymphocyte ratio"[Title/Abstract]

21 "PLR"[Title/Abstract]

22 16 OR 17 OR 18 OR 19 OR 20 OR 21

Concept 4: Prognosis/Survival (Outcomes)

23 "Prognosis"[Mesh] OR "Survival Analysis"[Mesh] OR "Mortality"[Mesh]

24 "prognos*"[Title/Abstract]

25 "survival"[Title/Abstract]

26 "mortality"[Title/Abstract]

27 "outcome*"[Title/Abstract]

28 "predict*"[Title/Abstract]

29 23 OR 24 OR 25 OR 26 OR 27 OR 28

Combined Final Search Strategy

30 8 AND (15 OR 22) AND 29

Filters Applied

31 30 AND (English[Language]) AND ("1000/01/01"[Date - Publication] : "2026/05/01"[Date - Publication])

Final Query String for Direct PubMed Input:

(("Cholangiocarcinoma"[Mesh] OR "cholangiocarcinoma*"[Title/Abstract] OR "bile duct neoplasm*"[Title/Abstract] OR "bile duct cancer*"[Title/Abstract] OR "biliary tract neoplasm*"[Title/Abstract] OR "biliary tract cancer*"[Title/Abstract] OR "cholangiocellular carcinoma*"[Title/Abstract]) AND ("Neutrophil-to-Lymphocyte Ratio"[Mesh] OR "Neutrophils"[Mesh] OR "Lymphocytes"[Mesh] OR "neutrophil-to-lymphocyte ratio"[Title/Abstract] OR "neutrophil to lymphocyte ratio"[Title/Abstract] OR "neutrophil-lymphocyte ratio"[Title/Abstract] OR "neutrophil lymphocyte ratio"[Title/Abstract] OR "NLR"[Title/Abstract] OR "Blood Platelets"[Mesh] OR "platelet-to-lymphocyte ratio"[Title/Abstract] OR "platelet to lymphocyte ratio"[Title/Abstract] OR "platelet-lymphocyte ratio"[Title/Abstract] OR "platelet lymphocyte ratio"[Title/Abstract] OR "PLR"[Title/Abstract]) AND ("Prognosis"[Mesh] OR "Survival Analysis"[Mesh] OR "Mortality"[Mesh] OR

"prognos*"[Title/Abstract] OR "survival"[Title/Abstract] OR "mortality"[Title/Abstract] OR "outcome*"[Title/Abstract] OR "predict*"[Title/Abstract])) AND (English[Language]) AND ("1000/01/01"[Date - Publication] : "2026/05/01"[Date - Publication])

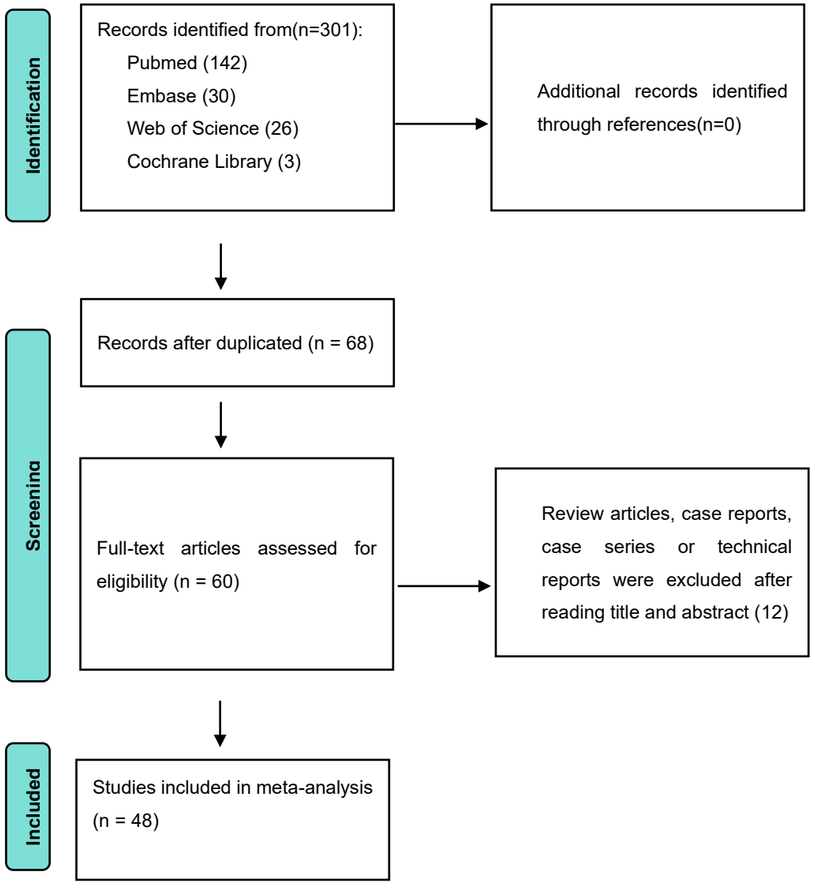
Supplementary Table 1 Risk of bias of cohort or case–control studies (NOS evaluation)

study, publication year	Representativeness of cohort	Ascertainment of exposure	Selection of nonexposed cohort	Outcome lacking at the beginning	Comparability of cohorts	Outcome assessment	Sufficient follow-up time	Follow-up adequacy	Score

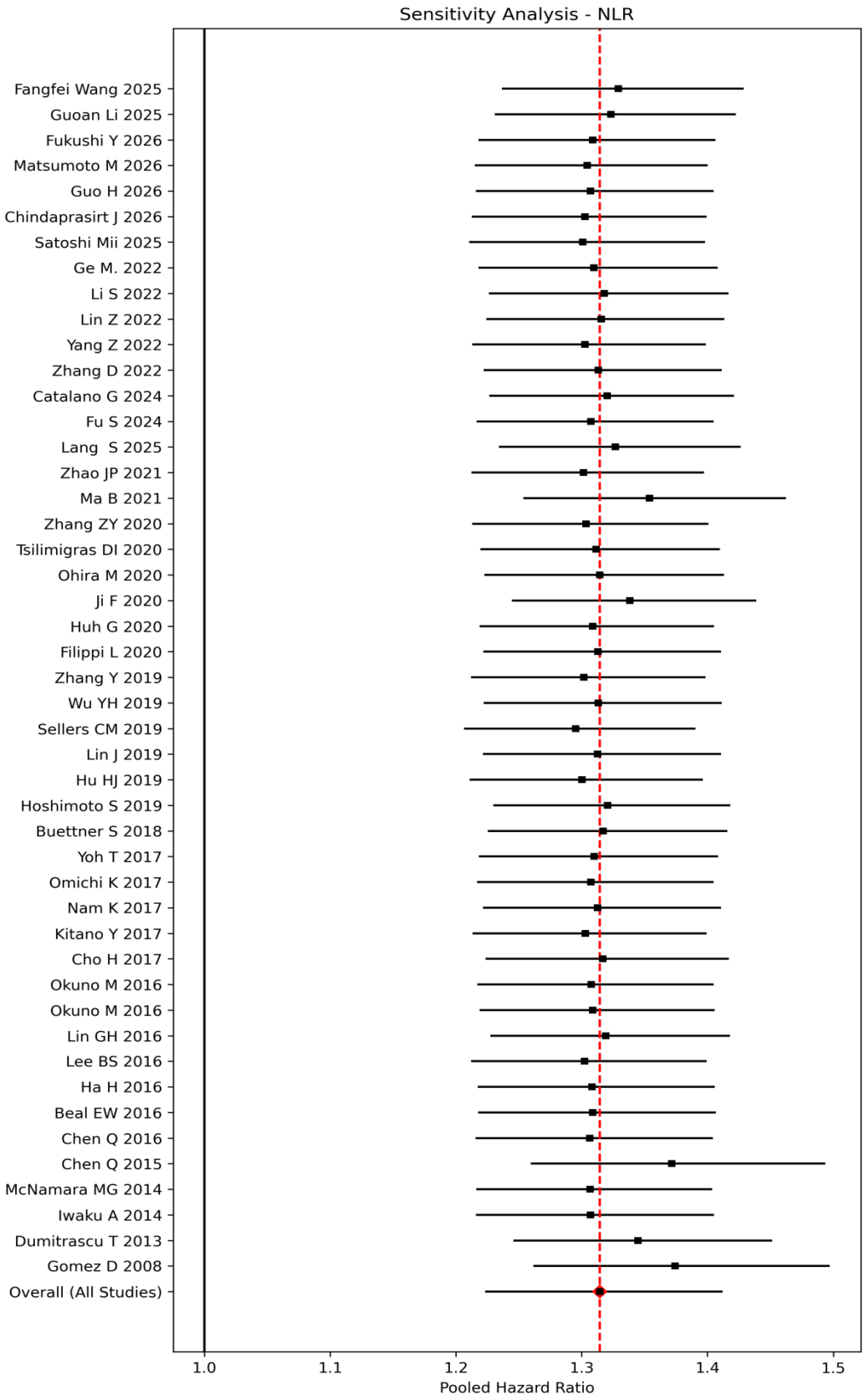
Fangfei Wang 2025[15]	*	*	*	*	*	*	*	*	**8**
Guoan Li 2025[16]	*	*	*	*	**	*	*	*	**9**
Fukushi Y 2026[17]	*	*	*	*	**	*	*	*	**9**
Matsumoto M 2026[18]	*	*	*	*	**	*	*	*	**9**
Guo H 2026[11]	*	*	*	*	**	*	*	*	**9**
Chindaprasirt J 2026[7]	*	*	*	*	**	*	*	*	**9**
Satoshi Mii 2025[19]	*	*	*	*	**	*	*	*	**9**
Ge M. 2022[20]	*	*	*	*	**	*	*	*	**9**
Li S 2022[21]	*	*	*	*	**	*	*	*	**9**
Lin Z 2022[22]	*	*	*	*	**	*	*	*	**9**
Yang Z 2022[23]	*	*	*	*	**	*	*	*	**9**
Zhang D 2022[24]	*	*	*	*	**	*	*	*	**9**
Catalano G 2024[25]	*	*	*	*	**	*	*	*	**9**
Fu S 2024[26]	*	*	*	*	**	*	*	*	**9**
Jin J 2024[27]	*	*	*	*	**	*	*	*	**9**
LANG S 2025[9]	*	*	*	*	**	*	*	*	**9**
Zhao JP 2021[28]	*	*	*	*	**	*	*	*	**9**
Ma B 2021[29]	*	*	*	*	**	*	*	*	**9**
Zhang ZY 2020[30]	*	*	*	*	**	*	*	*	**9**
Tsilimigras DI 2020[31]	*	*	*	*	**	*	*	*	**9**
Ohira M 2020[32]	*	*	*	*	**	*	*	*	**9**
Ji F 2020[33]	*	*	*	*	**	*	*	*	**9**
Huh G 2020[34]	*	*	*	*	**	*	*	*	**9**
Filippi L 2020[35]	*	*	*	*	**	*	*	*	**9**
Zhang Y 2019[36]	*	*	*	*	**	*	*	*	**9**
Wu YH 2019[37]	*	*	*	*	**	*	*	*	**9**

Sellers CM 2019[38]	*	*	*	*	**	*	*	*	**9**
Lin J 2019[39]	*	*	*	*	**	*	*	*	**9**
Hu HJ 2019[40]	*	*	*	*	**	*	*	*	**9**
Hoshimoto S 2019[41]	*	*	*	*	**	*	*	*	**9**
Buettner S 2018[42]	*	*	*	*	**	*	*	*	**9**
Yoh T 2017[43]	*	*	*	*	**	*	*	*	**9**
Omichi K 2017[44]	*	*	*	*	**	*	*	*	**9**
Nam K 2017[45]	*	*	*	*	**	*	*	*	**9**
Kitano Y 2017[46]	*	*	*	*	**	*	*	*	**9**
Cho H 2017[47]	*	*	*	*	**	*	*	*	**9**
Okuno M 2016[48]	*	*	*	*	**	*	*	*	**9**
Okuno M 2016[49]	*	*	*	*	**	*	*	*	**9**
Lin GH 2016[50]	*	*	*	*	**	*	*	*	**9**
Lee BS 2016[51]	*	*	*	*	**	*	*	*	**9**
Ha H 2016[52]	*	*	*	*	**	*	*	*	**9**
Beal EW 2016[53]	*	*	*	*	**	*	*	*	**9**
Chen Q 2016[54]	*	*	*	*	**	*	*	*	**9**
Chen Q 2015[55]	*	*	*	*	**	*	*	*	**9**
McNamara MG 2014[56]	*	*	*	*	**	*	*	*	**9**
Iwaku A 2014[57]	*	*	*	*	**	*	*	*	**9**
Dumitrascu T 2013[58]	*	*	*	*	**	*	*	*	**9**
Gomez D 2008[59]	*	*	*	*	**	*	*	*	**9**

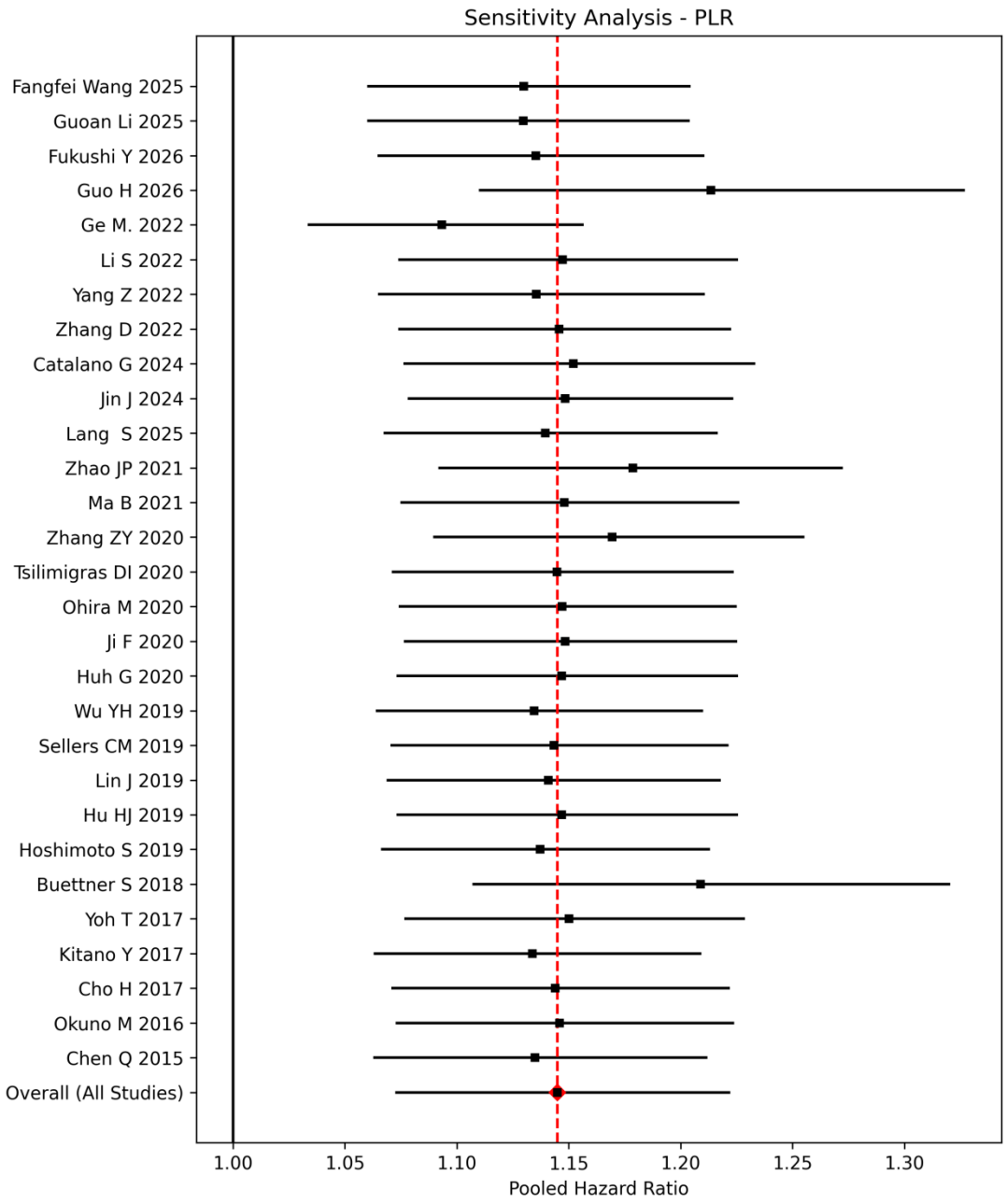
PRISMA Flowchart



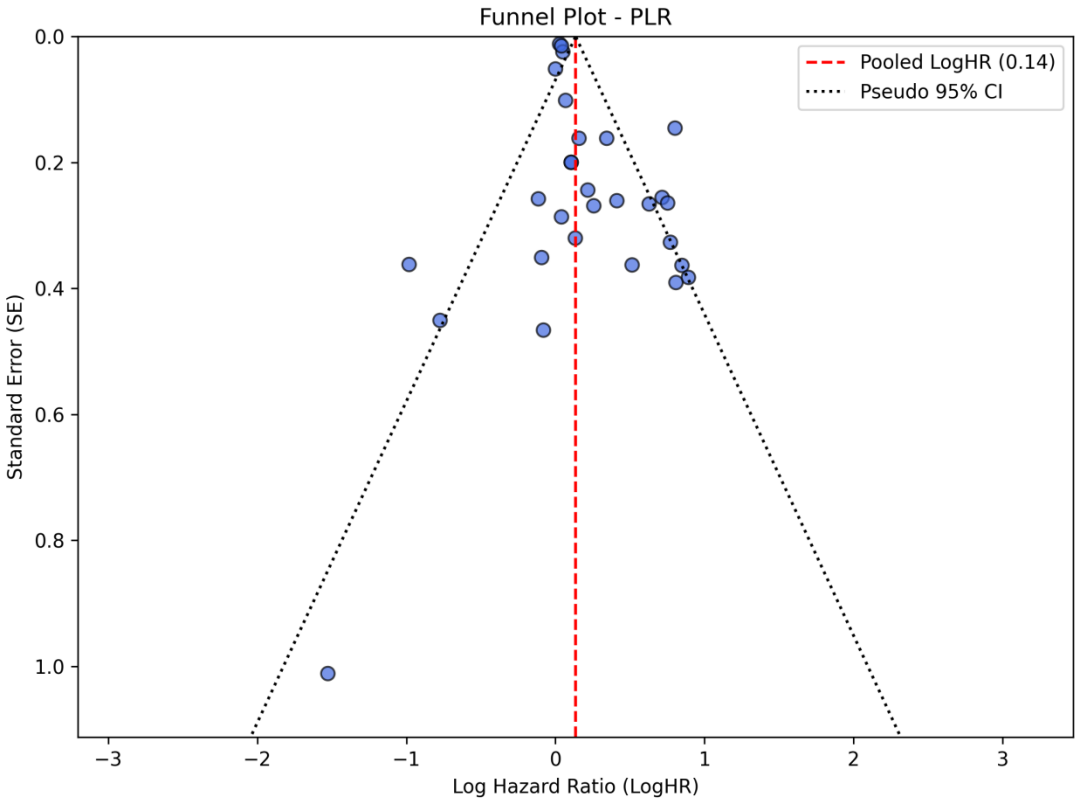
Supplementary Figure 1 Study selection process. The flowchart showed the selection of included studies for meta-analysis



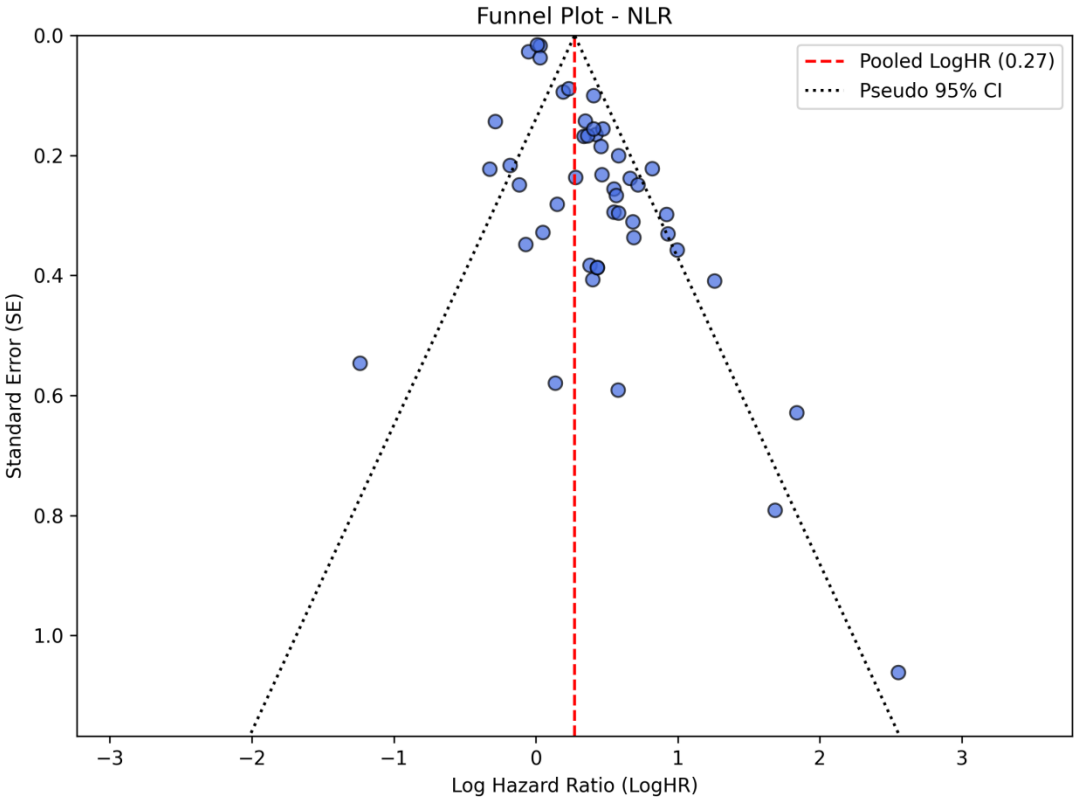
Supplementary Figure 2 Sensitivity analysis of NLR



Supplementary Figure 3 Sensitivity analysis of PLR



Supplementary Figure 4 Funnel Plot of PLR



Supplementary Figure 5 Funnel Plot of NLR