

Supplementary material

Pruc M, Kubica J, Banach M, et al. Diagnostic and prognostic performance of neutrophil-to-lymphocyte ratio in acute coronary syndromes: A meta-analysis of 90 studies including 45 990 patients. Pol Heart J. 2024.

Please note that the journal is not responsible for the scientific accuracy or functionality of any supplementary material submitted by the authors. Any queries (except missing content) should be directed to the corresponding author of the article.

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Full list of publications included in the meta-analysis

1. Adam AM, Rizvi AH, Haq A, et al. Prognostic value of blood count parameters in patients with acute coronary syndrome. *Indian Heart J.* 2018;70(2):233-240. doi: 10.1016/j.ihj.2017.06.017.
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Table S1. PRISMA checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	3
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	3
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	3
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	3
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	4
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	4
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	4
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	4

Section and Topic	Item #	Checklist item	Location where item is reported
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	4
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	4
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	4
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	4
	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	4
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	4
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	4
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	4
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	4
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	4
RESULTS			
Study	16a	Describe the results of the search and selection process, from the number of records identified in the search to the	5

Section and Topic	Item #	Checklist item	Location where item is reported
selection		number of studies included in the review, ideally using a flow diagram.	
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	5
Study characteristics	17	Cite each included study and present its characteristics.	5
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	5
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	5
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	5
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	5
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	5
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	5
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	5
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	5
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	6
	23b	Discuss any limitations of the evidence included in the review.	7
	23c	Discuss any limitations of the review processes used.	7

Section and Topic	Item #	Checklist item	Location where item is reported
	23d	Discuss implications of the results for practice, policy, and future research.	7
OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	3
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	3
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	-
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	1
Competing interests	26	Declare any competing interests of review authors.	1
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	1

Table S2. Major cardiovascular events (MACE) definition across included trials

STUDY	MACE type											All cause mortality
	non-fat MI	myocardial re-infarction	re-hospitalization	cardiac arrhythmias	stroke	target vessel revascularization	cardiogenic shock	Heart failure	PEA / asystole	Acute pulmonary edema	Cardiac death	
Adam et al., 2018												
Ahmed et al., 2020												
Bicci�re et al., 2023												
Chen et al., 2020												
Dehghani 2014												
Gu 2023												
Hartopo 2015												
Her 2017												
Huang 2009												
Hoang Ngo 2023												

Immanuel 2021												
Karadeniz 2023												
Karaoğlu 2021												
Konishi 2017												
Li 2020												
Li 2022												
Oncel 2015												
Wang 2020												
Zhang 2015												

Table S3. Baseline characteristics of included trials

Study	Country	Study design	Study group	No. of patients	Age, mean (SD)	Male, %	LVEF, %	HNT, %	Dyslipidemia, %	Diabetic mellitus, %	Smoking, %	NOS score
Adam et al., 2018	Pakistan	PS	MACE (+)	102	54.49±11.41	68 (66.7%)	NS	66 (64.7%)	NS	37 (36.3%)	29 (28.4%)	8
			MACE (-)	195	55.82±10.50	120 (61.5%)	NS	144 (73.8%)	NS	71 (36.4%)	63 (32.3%)	
Ahmed et al., 2020	Egypt	RS	MACE (+)	79	61.4±12.4	NS	NS	249 (47.2%)	185 (35.0%)	184 (34.8%)	349 (66.1%)	8
			MACE (-)	528	57.2±11.0	NS	NS	47 (59.5%)	28 (35.4%)	38 (48.1%)	46 (58.2%)	
	Pakistan	CSS	Survived	154	59±11.2	NS	NS	NS	NS	NS	NS	7

Akhter et al., 2023			Decreased	5	63.43±15	NS	NS	NS	NS	NS	NS	
Al-Sayed et al., 2022	Sudan	CSS	UA	23	57 (50-64.5)	10 (43.5%)	NS	13 (56.5%)	4 (17.4%)	10 (43.5%)	1 (4.3%)	9
			NSTEMI	49	60 (53.5-65.3)	29 (59.2%)	NS	28 (57.1%)	4 (8.2%)	21 (42.9%)	12 (24.5%)	
			STEMI	58	57 (46-65)	42 (72.4%)	NS	23 (39.7%)	7 (12.1%)	26 (44.8%)	19 (32.8%)	
Algın et al., 2021	Turkey	RS	NSTEMI	79	59 (50-74)	49 (62.0%)	NS	33 (41.8%)	8 (10.1%)	34 (43.0%)	9 (11.4%)	8
			STEMI	30	60 (48-69)	23 (76.7%)	NS	10 (33.3%)	2 (6.7%)	9 (30.0%)	6 (20.0%)	
Babes et al., 2021	Romania	RS	Survived	849	64.90 ± 11.56	559 (65.8%)	47.09 ± 8.63	595 (70.1%)	360 (42.4%)	261 (30.7%)	201 (23.7%)	8
			Decreased	87	72.98 ± 11.60	42 (48.3%)	34.4 ± 9.87	30 (34.5%)	64 (73.6%)	33 (37.9%)	23 (26.4%)	
Bajari et al., 2017	India	PS	Survived	353	59.1 ± 11.48	261 (73.93%)	NS	122 (34.6%)	81 (22.9%)	75 (21.2%)	118 (33.4%)	8
			Decreased	47	68.82 ± 12.49	27 (57.45%)	NS	26 (55.3%)	8 (17.0%)	13 (27.7%)	16 (34.0%)	
Bandara et al., 2018	Sri Lanka	CSS	STEMI	350	61.27±11.64	259 (74.0%)	NS	45 (12.9%)	82 (23.4%)	73 (20.9%)	NS	8
			Control	250	59.80±11.90	178 (71.2%)	NS	18 (7.2%)	36 (14.4%)	32 (12.8%)	NS	
Bekler et al., 2014	Turkey	RS	UA	142	60 (30-88)	65 (45.8%)	55 (28-70)	58 (40.8%)	NS	41 (28.9%)	47 (33.1%)	9
			NSTEMI	238	64 (19-90)	104 (43.7%)	50 (25-70)	129 (54.2%)	NS	73 (30.7%)	90 (37.8%)	
			STEMI	122	63 (29-89)	92 (75.4%)	50 (30-70)	57 (46.7%)	NS	56 (45.9%)	41 (33.6%)	
Biccirè et al., 2023	Italy	PS	MACE (+)	71	68.8 ± 14.7	54 (76.1%)	34.83 ± 9.47	314 (78.9%)	NS	115 (28.9%)	165 (41.7%)	9

			MACE (-)	398	65.2 ± 12.6	307 (77.1%)	46.02 ± 8.46	63 (88.7%)	NS	27 (38.0%)	22 (31.9%)	
Çaltekin et al., 2020	Turkey	RS	STEMI	86	61 ± 13	NS	NS	NS	NS	NS	NS	7
			Control	82	62 ± 12	NS	NS	NS	NS	NS	NS	
Canga et al., 2018	Turkey	RS	ACS	52	47.9 ± 7.9	23 (44.2%)	NS	17 (32.7%)	6 (11.5%)	8 (15.4%)	19 (36.5%)	8
			Control	30	45.6 ± 9.1	12 (30.0%)	NS	9 (30.0%)	2 (6.7%)	4 (13.3%)	5 (16.7%)	
Cao et al., 2023	China	RS	AMI	284	61.27 ± 12.01	237 (83.5%)	NS	157 (55.3%)	155 (54.6%)	56 (19.7%)	177 (62.3%)	8
			Control	91	59.10 ± 11.96	51 (56.0%)	NS	51 (56.0%)	46 (50.6%)	15 (16.5%)	23 (25.3%)	
Chawla et al., 2019	India	PS	ACS	116	NS	NS	NS	NS	NS	NS	NS	7
			Control	116	NS	84	NS	NS	NS	NS	NS	
Chen et al., 2020	China	RS	MACE (+)	20	76.5 (69.5-78)	14 (70.0%)	49.15 ± 4.34	15 (75.0%)	3 (15.0%)	5 (25.0%)	15 (75.0%)	8
			MACE (-)	87	72 (67-77)	72 (90.0%)	52.83 ± 5.57	55 (63.2%)	7 (8.1%)	14 (13.1%)	30 (34.5%)	
Chen et al., 2023	China	RS	Survived	1418	72.5 ± 8.3	71 (46.2%)	NS	85 (64.3%)	NS	68 (51.5%)	NS	8
			Decreased	132	79.55 ± 8.78	855 (39.7%)	NS	994 (70.1%)	NS	603 (42.5%)	NS	
Damar et al., 2022	Turkey	PS	NSTEMI	63	58.03 ± 10.07	43 (68.3%)	50.65 ± 8.18	40 (63.5%)	35 (55.6%)	24 (38.1%)	36 (57.1%)	8
			Control	62	56.69 ± 11.17	40 (64.5%)	63.87 ± 2.78	35 (56.5%)	36 (58.1%)	13 (21.0%)	18 (29.0%)	
Damar et al., 2022b	Turkey	PS	STEMI	75	58.96 ± 10.37	60 (80%)	47.69 ± 7.89	40 (53.3%)	38 (50.7%)	36 (48%)	37 (49.3%)	8
			Control	65	56.29 ± 10.14	52 (80%)	63.62 ± 2.91	37 (56.9%)	33 (50.8%)	21 (32.3%)	31 (47.7%)	
Dehghani et al., 2014	Iran	PS	MACE (+)	81	60.6 ± 13.1	49 (60.5%)	NS	54 (66.7%)	13 (16.0%)	31 (38.3%)	24 (29.6%)	8

			MACE (-)	409	60.4 ± 12.9	240 (58.7%)	NS	223 (54.5%)	74 (18.1%)	114 (27.9%)	105 (25.7%)	
Del Turco et al., 2022	Italy	RS	AMI	361	66 ± 12	276 (76.5%)	46 ± 11	188 (52.1%)	289 (80.1%)	129 (35.7%)	181 (50.1%)	9
			Control	806	65 ± 11	466 (57.8%)	53 ± 12	437 (54.2%)	416 (51.6%)	162 (20.1%)	276 (34.2%)	
Dong et al., 2023	China	PS	AMI	212	64.23 ± 14.34	133 (62.7%)	NS	105 (49.5%)	NS	40 (18.9%)	75 (35.4%)	8
			Control	60	63.64 ± 8.01	37 (61.7%)	NS	29 (48.3%)	NS	15 (25.0%)	20 (33.3%)	
Erdoğan et al., 2021	Turkey	CSS	STEMI	94	58.7±11.1	80 (85.1%)	43.9±8.5	39 (41.5%)	NS	22 (23.4%)	65 (69.1%)	9
			NSTEMI	97	62.1±13.7	71 (73.2%)	49±11.2	61 (62.9%)	NS	43 (44.3%)	44 (45.4%)	
Ertürk et al., 2017	Turkey	CCS	ACS	319	56.6 ± 11.4	219 (68.7%)	NS	145 (45.5%)	NS	57 (17.9%)	156 (48.9%)	8
			UA	114	NS	NS	NS	NS	NS	NS	NS	
			NSTEMI	101	NS	NS	NS	NS	NS	NS	NS	
			STEMI	104	NS	NS	NS	NS	NS	NS	NS	
			Control	283	47.3 ± 13.6	181 (64.0%)	NS	102 (36.0%)	NS	39 (13.8%)	127 (44.9%)	
Ghaffari et al., 2014	Iran	CSS	Survived	389	58.7 ± 12.9	321 (82.5%)	38 ± 10	148 (38.1%)	109 (28.0%)	95 (24.4%)	177 (45.5%)	8
			Decreased	15	65.7 ± 13.4	7 (46.7%)	27 ± 12	9 (60.0%)	5 (33.3%)	6 (40.0%)	3 (20.0%)	
Gu et al., 2023	China	RS	MACE (+)	98	67 (61–75)	76 (77.6%)	61.95 (51.8–64)	67 (68.4%)	69 (70.4%)	21 (21.4%)	37 (37.8%)	8
			MACE (-)	552	63 (55–70)	398 (72.1%)	63.30 (60.90–65.60)	373 (67.6%)	80 (70.2%)	140 (25.4%)	199 (36.1%)	

Guclu et al., 2020	Turkey	PS	Survived	148	61.5 ± 10.6	120 (92.3%)	NS	76 (86.4%)	106 (86.9%)	98 (66.2%)	64 (84.2%)	9
			Decreased	22	68.09 ± 18.7	10 (45.5%)	NS	12 (54.5%)	16 (72.7%)	16 (72.7%)	12 (54.5%)	
Gunes et al., 2019	Turkey	PS	NSTEMI	120	NS	NS	NS	NS	NS	NS	NS	7
			Control	410	NS	NS	NS	NS	NS	NS	NS	
Guo et al., 2018	China	RS	UA	216	69.92±7.30	161 (74.5%)	NS	164 (75.9%)	NS	65 (30.1%)	112 (51.9%)	9
			NSTEMI	261	63.7 ± 12.4	189 (72.4%)	NS	184 (70.5%)	NS	90 (34.5%)	142 (54.4%)	
			STEMI	397	58.7 ± 12.2	323 (81.4%)	NS	221 (55.7%)	NS	121 (30.5%)	241 (60.7%)	
			SA	126	68.47±6.84	90 (71.4%)	NS	86 (68.3%)	NS	44 (34.9%)	63 (50.0%)	
Haque et al., 2022	Bangladesh	PS	ACS	138	50.91 ± 9.7	130 (94.2%)	NS	64 (46.3%)	NS	NS	71 (70.6%)	8
			Control	134	48.1 ± 9.54	126 (94.0%)	NS	20 (14.6%)	NS	NS	27 (20.0%)	
Hartopo et al., 2015	Indonesia	RS	MACE (+)	49	58.9 ± 8.8	34 (69.4%)	NS	33 (67.3%)	NS	19 (38.8%)	17 (34.7%)	8
			MACE (-)	116	57.7 ± 9.2	97	NS	74 (63.8%)	NS	26 (22.4%)	65 (56.0%)	
Her et al., 2017	South Korea	PS	MACE (+)	27	62.9 ± 12.2	19 (70.4%)	48.4 ± 11.5	13 (48.1%)	10 (37.0%)	4 (14.8%)	6 (22.2%)	9
			MACE (-)	145	56.1 ± 12.1	121 (83.4%)	54.1 ± 9.2	59 (40.7%)	44 (30.6%)	26 (17.9%)	34 (23.4%)	
Hoang Ngo et al., 2023	Viet Nam	CSS	MACE (+)	44	68.27 ± 12.49	24 (54.5%)	NS	33 (75.0%)	31 (70.5%)	22 (50.0%)	14 (31.8%)	7
			MACE (-)	98	66.9 ± 13	60 (61.2%)	NS	84 (85.7%)	35 (35.7%)	18 (18.4%)	29 (29.6%)	
Huang et al., 2009	China	RS	MACE (+)	167	73 (48-85)	109 (65.3%)	NS	103 (61.7%)	NS	36 (21.6%)	49 (29.3%)	8

			MACE (-)	456	65 (47-87)	291 (63.8%)	NS	244 (53.5%)	NS	94 (20.6%)	117 (25.7%)	
Immanuel et al., 2021	Indonesia	CSS	MACE (+)	31	60.68 ± 12.27	25 (80.6%)	NS	23 (74.2%)	97 (22.6%)	9 (29.0%)	18 (58.1%)	8
			MACE (-)	28	58.11 ± 8.07	21 (75.0%)	NS	17 (60.7%)	9 (32.1%)	14 (50.0%)	16 (57.1%)	
Jadhav et al., 2022	India	RS	Survived	332	55.78 ± 12.18	245 (73.8%)	NS	63 (18.97%)	66 (19.9%)	56 (16.9%)	115 (34.6%)	8
			Decreased	68	61.83 ± 14.45	30 (44.1%)	NS	12 (17.7%)	13 (19.1%)	13 (19.1%)	15 (22.1%)	
Kahraman et al., 2022	Turkey	RS	Survived	475	64.7 ± 12.2	352 (74.1%)	55 (46-60)	228 (48.0%)	NS	173 (36.4%)	NS	8
			Decreased	50	71.6 ± 10.5	29 (58.0%)	35 (27-47)	24 (48.0%)	NS	20 (40.0%)	NS	
Karadeniz et al., 2023	Turkey	RS	MACE (+)	195	77.3 ± 10.6	123 (63.1%)	NS	97 (49.7%)	86 (44.1%)	57 (29.2%)	23 (11.8%)	9
			MACE (-)	908	66.3 ± 11.8	636 (70.0%)	NS	495 (54.5%)	539 (59.4%)	250 (27.5%)	189 (20.8%)	
			STEMI	403	67.7 ± 12.6	304 (75.4%)	NS	192 (47.6%)	239 (59.3%)	97 (24.1%)	109 (27.0%)	
			NSTEMI	700	68.5 ± 12.2	455 (65.0%)	NS	400 (57.1%)	386 (55.1%)	210 (30.0%)	103 (14.7%)	
Karaoğlu et al., 2021	Turkey	RS	MACE (+)	60	61.7 ± 12.4	43 (71.7%)	NS	50 (83.3%)	28 (46.7%)	27 (45.0%)	14 (23.3%)	8
			MACE (-)	199	60.0 ± 11.8	145 (72.9%)	NS	157 (78.9%)	81 (40.7%)	75 (37.7%)	61 (30.7%)	
Konishi et al., 2017	Japan	RS	MACE (+)	68	73.1 ± 12.6	43 (63.2%)	50.2 ± 13.6	43 (63.2%)	51 (75.0%)	25 (36.8%)	35 (51.5%)	8
			MACE (-)	263	65.7 ± 12.4	209 (79.5%)	54.4 ± 10.5	186 (70.7%)	219 (83.3%)	95 (36.1%)	158 (60.1%)	
Leylek et al., 2020	Turkey	PS	STEMI	49	57 (39-76)	44 (89.8%)	NS	20 (40.8%)	2 (4.1%)	9 (18.4%)	24 (49.0%)	8

			NSTEMI	51	58 (40-85)	38 (74.5%)	NS	32 (62.7%)	5 (9.8%)	15 (29.4%)	19 (37.3%)	
Li et al., 2019	China	RS	UA	10	60.8 ± 12.1	9 (9.0%)	60.9 ± 7.3	9 (90.0%)	4 (40.0%)	4 (40.0%)	6 (60.0%)	8
			NSTEMI	20	65.0 ± 13.0	15 (75.0%)	58.5 ± 8.2	12 (60.0%)	12 (60.0%)	12 (60.0%)	13 (65.0%)	
			STEMI	62	62.7 ± 10.7	54 (87.1%)	55.3 ± 8.1	45 (72.6%)	17 (27.4%)	24 (38.7%)	29 (46.8%)	
Li et al., 2020	China	RS	MACE (+)	81	64 (52-72.3)	57 (70.4%)	53 (41- 58)	41 (50.6%)	NS	26 (32.1%)	37 (45.7%)	8
			MACE (-)	421	61.5 (52-69)	315 (74.8%)	60 (57- 62)	236 (56.1%)	NS	110 (26.1%)	213 (50.6%)	
Li et al., 2022	China	PS	MACE (+)	107	25.3 ± 11.4	78 (72.9%)	60 (53- 66)	75 (70.1%)	91 (85.0%)	52 (48.6%)	45 (42.1%)	9
			MACE (-)	1594	25.7 ± 9.4	1227 (77%)	65 (60- 68)	1107 (63.2%)	1268 (79.5%)	731 (45.9%)	709 (44.5%)	
Lin et al., 2021	China	RS	Survived	157	63.57 ± 11.63	131 (83.4%)	NS	53 (33.76%)	NS	34 (21.66%)	NS	8
			Decreased	24	68.19 ± 10.72	21 (87.5%)	NS	7 (29.17%)	NS	5 (20.83%)	NS	
Ling et al., 2021	China	RS	ACS	201	65 (57-71)	136 (67.7%)	62 (58- 65)	127 (63.2%)	NS	49 (24.4%)	30 (14.9%)	8
			SA	145	65 (57-72)	83 (57.2%)	64 (60- 66)	95 (65.5%)	NS	27 (18.6%)	14 (9.7%)	
Mansiroglu et al., 2020	Turkey	RS	UA	102	64 ± 12	79 (77.4%)	NS	67 (65.7%)	NS	39 (38.2%)	42 (41.2%)	8
			NSTEMI	221	67 ± 12	146 (66.1%)	NS	139 (62.9%)	NS	83 (37.6%)	81 (36.7%)	
			STEMI	103	67 ± 13	76 (73.8%)	NS	53 (51.5%)	NS	27 (26.2%)	35 (34.0%)	
Maréchal et al., 2020	Belgium	PS	UA	19	67 ± 11	17 (89.5%)	NS	16 (84.2%)	13 (68.4%)	8 (42.1%)	12 (63.2%)	

			NSTEMI	25	63 ± 12	19 (76.0%)	NS	14 (56.0%)	13 (52.0%)	5 (20.0%)	15 (60.0%)	
			STEMI	27	64 ± 10	20 (74.1%)	NS	18 (66.7%)	13 (48.1%)	8 (29.6%)	22 (81.5%)	
			SA	37	69 ± 9	25 (67.6%)	NS	29 (78.4%)	25 (67.6%)	13 (35.1%)	24 (64.9%)	
Mayyas et al., 2014	Jordan	PS	NSTEMI	41	NS	NS	NS	NS	NS	NS	NS	7
			STEMI	41	NS	NS	NS	NS	NS	NS	NS	
Monteiro Jr et al., 2018	Brazil	PS	Survived	411	NS	NS	NS	NS	NS	NS	NS	7
			Decreased	55	NS	NS	NS	NS	NS	NS	NS	
Mustafic et al., 2020	Bosnia and Herzegovina	PS	ACS	59	65.77 ± 10.53	NS	NS	NS	NS	NS	NS	8
			SA	23	52.83 ± 18.77	NS	NS	NS	NS	NS	NS	
Nilsson et al., 2014	Netherlands	PS	NSTEMI	20	67 ± 10	15 (75.0%)	NS	7 (35.0%)	NS	1 (5.0%)	NS	8
			SA	30	64 ± 9	26 (86.7%)	NS	21 (70.0%)	NS	4 (13.3%)	NS	
			Control	37	64 ± 8	28 (75.7%)	NS	0 (0.0%)	NS	0 (0.0%)	NS	
Oh et al., 2020	Korea	RS	Survived	982	59.7 ± 12.9	784 (79.8%)	48.0 ± 11.5	452 (46.0%)	NS	250 (25.5%)	NS	8
			Decreased	75	70.8 ± 11.0	53 (70.7%)	35.7 ± 14.9	44 (58.7%)	NS	29 (38.7%)	NS	
Oncel et al., 2015	Turkey	RS	MACE (+)	11	70.27 ± 10.24	9 (81.8%)	NS	8 (72.7%)	3 (27.3%)	3 (27.3%)	7 (63.6%)	8
			MACE (-)	90	56.47 ± 11.64	72 (80.0%)	NS	34 (37.8%)	31 (34.4%)	20 (22.2%)	50 (55.6%)	
Özbay et al., 2020	Turkey	RS	UA	399	61.7 ± 12.8	215 (53.9%)	59.8 ± 9.6	NS	NS	NS	NS	8
			NSTEMI	141	67.8 ± 10.4	85 (60.3%)	47.7 ± 13.8	NS	NS	NS	NS	

			STEMI	225	64.0 ± 11.3	167 (74.2%)	49.6 ± 11.9	NS	NS	NS	NS	
			AMI	148	65.8 ± 11.9	100 (67.6%)	44.5 ± 8.0	NS	NS	NS	NS	
Öztürk et al., 2013	Turkey	RS	UA	44	38.4 ± 4.9	30 (68.2%)	NS	15 (34.1%)	NS	5 (11.3%)	27 (61.3%)	8
			NSTEMI	40	38.9 ± 4.4	29 (72.5%)	NS	17 (42.5%)	NS	5 (12.5%)	30 (75.0%)	
			Control	40	39.8 ± 3.9	28 (70.0%)	NS	8 (20.0%)	NS	1 (2.5%)	16 (40.0%)	
Paul et al., 2021	India	PS	Survived	92	64.76 ± 15.12	69 (42.4%)	NS	61 (66.3%)	35 (38.04%)	63 (68.48%)	NS	9
			Decreased	10	58.2 ± 10.56	8 (80.0%)	NS	8 (80.0%)	5 (50.0%)	9 (90.0%)	NS	
Pieszko et al., 2019	Poland	RS	Survived	4287	65.5 (59.4-73)	2908 (67.8%)	NS	NS	NS	1181 (27.5%)	NS	8
			Decreased	766	72.1 (64.4-79.8)	493 (64.4%)	NS	NS	NS	263 (34.3%)	NS	
Quisi et al., 2021	Turkey	PS	NSTEMI	200	56.3 ± 8.6	161 (80.5%)	57.3 ± 6.6	87 (43.5%)	73 (36.5%)	83 (41.5%)	92 (46.0%)	9
			STEMI	218	54.5 ± 7.7	203 (93.1%)	51.5 ± 6.8	70 (32.1%)	83 (38.1%)	56 (25.7%)	121 (55.5%)	
Rao et al., 2019	India	PS	AMI	48	60.25 ± 7.56	35 (72.9%)	NS	36 (75%)	11 (22.92%)	18 (37.5%)	32 (66.7%)	8
			Control	48	53.41 ± 9.03	32 (66.7%)	NS	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Selanno et al., 2022	Indonesia	RS	NSTEMI	93	NS	NS	NS	NS	NS	NS	NS	7
			STEMI	152	NS	NS	NS	NS	NS	NS	NS	
Setianingrum et al., 2019	Indonesia	CSS	NSTEMI	24	NS	NS	NS	NS	NS	NS	NS	7
			STEMI	35	NS	NS	NS	NS	NS	NS	NS	
			Control	38	NS	NS	NS	NS	NS	NS	NS	
Sharma et al., 2015	India	PS	Survived	863	NS	NS	NS	NS	NS	NS	NS	7
			Decreased	96	NS	NS	NS	NS	NS	NS	NS	

Sharma et al., 2023	India	PS	Survived	863	58.78 ± 15.3	582 (67.4%)	NS	610 (70.7%)	NS	488 (56.5%)	441 (51.1%)	8
			Decreased	96	54.89 ± 18.33	64 (66.7%)	NS	69 (71.9%)	NS	69 (71.9%)	59 (61.5%)	
Sheng et al., 2021	China	PS	UA	156	63.6 ± 10.6	108 (69.2%)	NS	113 (72.4%)	NS	51 (32.7%)	31 (19.9%)	9
			NSTEMI	25	66.5 ± 10.8	18 (72.0%)	NS	16 (64.0%)	NS	9 (36.0%)	3 (12.0%)	
			STEMI	24	71.1 ± 9.8	12 (50.0%)	NS	13 (54.2%)	NS	3 (12.5%)	3 (12.5%)	
Shumilah et al., 2021	Yemen	CCS	ACS	100	55.5 ± 15	60 (60.0%)	NS	NS	NS	NS	62 (62.0%)	8
			Control	100	54.1 ± 15	60 (60.0%)	NS	NS	NS	NS	45 (45.0%)	
Siddig et al., 2020	Sudan	CSS	UA	15	63.6 ± 10.6	NS	NS	NS	NS	NS	NS	7
			NSTEMI	15	66.5 ± 10.8	NS	NS	NS	NS	NS	NS	
			STEMI	70	71.1 ± 9.8	NS	NS	NS	NS	NS	NS	
Sigirci et al., 2020	Turkey	RS	Survived	1086	63.5 (55-78.2)	898 (82.7%)	48 (40-55)	483 (44.5%)	422 (38.9%)	342 (31.5%)	281 (29.4%)	8
			Decreased	102	55 (48-74)	76 (74.5%)	38 (32.5-50)	50 (49.0%)	10 (9.8%)	33 (32.4%)	30 (29.4%)	
Siraj et al., 2020	Pakistan	CSS	Survived	106	58.32	NS	NS	NS	NS	NS	NS	7
			Decreased	23	68.91	NS	NS	NS	NS	NS	NS	
Sivri et al., 2018	Turkey	PS	NSTEMI	210	61.94 ± 12.52	NS	NS	141 (67.1%)	NS	74 (35.2%)	NS	8
			Control	185	59.84 ± 12.74	NS	NS	115 (62.1%)	NS	63 (34.0%)	NS	
Sonmez et al., 2015	Turkey	PS	STEMI	45	58 ± 15	24 (53.3%)	NS	NS	NS	NS	NS	8
			NSTEMI	65	59 ± 13	36 (55.4%)	NS	NS	NS	NS	NS	
			Control	45	60 ± 14	26 (57.8%)	NS	NS	NS	NS	NS	
	India	CSS	STEMI	55	NS	NS	NS	NS	NS	NS	NS	7

Sultana et al., 2023			NSTEMI	33	NS	NS	NS	NS	NS	NS	NS	
			UA	12	NS	NS	NS	NS	NS	NS	NS	
Tahto et al., 2017	Bosnia and Herzegovina	CSS	AMI	50	68.6 ± 10.0	NS	NS	NS	NS	NS	NS	7
			UA	50	64.8 ± 10.6	NS	NS	NS	NS	NS	NS	
Tanındı et al., 2014	Turkey	PS	ACS	58	61.2 ± 14.9	17 (29.3%)	NS	36 (62.1%)	34 (58.6%)	23 (39.7%)	33 (56.9%)	9
			SA	93	59.5 ± 12.5	43 (46.2%)	NS	50 (53.8%)	48 (51.6%)	27 (93.0%)	46 (49.5%)	
Tanriverdi et al., 2017	Turkey	RS	Survived	338	NS	NS	NS	NS	NS	NS	NS	7
			Decreased	30	NS	NS	NS	NS	NS	NS	NS	
Tenekecioglu et al., 2015	Turkey	RS	UA	83	56.2 ± 10.8	50 (60.2%)	55.6 ± 8.5	34 (41%)	NS	19 (23%)	42 (51%)	8
			NSTEMI	101	58.6 ± 12.2	59 (58.4%)	50.3 ± 9.6	40 (39%)	NS	16 (15%)	50 (50%)	
Topf et al., 2022	Austria	PS	ACS	63	64 (56-72)	22 (34.9%)	50 (45-66.8)	53 (84.1%)	NS	12 (19.0%)	18 (28.6%)	9
			Control	68	65 (54-71.8)	56 (82.3%)	67 (62.8-74)	59 (86.8%)	NS	19 (27.9%)	28 (41.2%)	
Tsai et al., 2017	Taiwan	RS	ACS	131	35.0 ± 4.9	121 (92.9%)	NS	37 (28.2%)	40 (30.5%)	17 (13.0%)	90 (68.7%)	8
			Control	114	31.8 ± 7.0	99 (86.8%)	NS	36 (31.6%)	31 (27.2%)	18 (15.8%)	50 (43.9%)	
Turkmen et al., 2013	Turkey	PS	STEMI	145	58.2 ± 12.3	104 (71.7%)	NS	50 (34.5%)	22 (15.2%)	28 (19.3%)	27 (18.6%)	8
			Control	101	56.0 ± 7.8	43 (42.6%)	NS	31 (30.7%)	5 (4.8%)	23 (22.8%)	23 (22.8%)	
Wang et al., 2020	China	RS	MACE (+)	32	70.78 ± 8.00	26 (81.3%)	59.06 ± 6.11	26 (81.3%)	NS	8 (25.0%)	11 (34.4%)	8
			MACE (-)	182	64.58 ± 8.11	122 (67.0%)	63.48 ± 7.17	134 (73.6%)	NS	66 (36.3%)	36 (19.8%)	
	China	RS	Survived	368	59.8 ± 12.4	NS	NS	NS	NS	NS	NS	8

Wang et al., 2022			Decreased	91	70.2 ± 11.3	NS	NS	NS	NS	NS	NS	
Yan et al., 2020	China	PS	Survived	370	82.55 ± 2.55	220 (59.5%)	54.29 ± 9.79	275 (74.3%)	NS	136 (36.8%)	141 (38.1%)	9
			Decreased	153	83.32 ± 3.11	109 (71.2%)	49.47 ± 11.86	134 (87.6%)	NS	85 (55.6%)	71 (46.4%)	
Yu et al., 2016	China	RS	ACS	349	66.78 ± 12.35	261 (74.8%)	NS	233 (66.8%)	45 (12.9%)	103 (29.5%)	185 (53.0%)	8
			SA	342	66.44 ± 9.79	182 (53.2%)	NS	257 (75.2%)	44 (12.9%)	183 (53.5%)	102 (29.8%)	
			Control	251	60.89 ± 9.68	110 (53.8%)	NS	153 (57.8%)	35 (13.9%)	55 (21.9%)	67 (26.7%)	
Zazula et al., 2007	Brazil	PS	UA	65	59 ± 11	56 (86%)	NS	56 (86%)	37 (57%)	21 (32%)	NS	8
			NSTEMI	33	69 ± 13	26 (79%)	NS	26 (79%)	12 (36%)	9 (27%)	NS	
			STEMI	35	61 ± 10	22 (63%)	NS	22 (63%)	13 (37%)	9 (26%)	NS	
			Control	45	56 ± 14	30 (67%)	NS	30 (67%)	15 (33%)	10 (22%)	NS	
Zhan et al., 2016	China	RS	ACS	376	63.6 ± 11.74	206 (54.8%)	NS	168 (44.7%)	NS	84 (22.3%)	NS	8
			Control	378	59.81 ± 9.47	199 (52.7%)	NS	184 (48.7%)	NS	46 (12.2%)	NS	
Zhang et al., 2014	China	PS	ACS	76	64.2 ± 12.2	59 (77.6%)	NS	49 (64.5%)	NS	15 (17.1%)	42 (55.3%)	7
			SA	92	61.42 ± 9.38	54 (58.7%)	NS	61 (66.3%)	NS	21 (22.8%)	30 (32.6%)	
Zhang et al., 2015	China	PS	MACE (+)	36	64.2 ± 11.2	24 (66.7%)	43.4 ± 8.7	20 (55.6%)	NS	7 (19.4%)	NS	8
			MACE (-)	212	61.0 ± 10.7	162 (76.4%)	48.7 ± 7.1	110 (51.9%)	NS	60 (28.3%)	NS	
Zhang et al., 2019	China	RS	UA	150	63.92 ± 9.95	82 (54.7%)	NS	85 (56.5%)	NS	35 (23.3%)	33 (22.0%)	8
			NSTEMI	100	62.26 ± 10.90	70 (70.0%)	NS	61 (61.0%)	NS	27 (27.0%)	29 (29.0%)	

			STEMI	59	61.34 ± 11.74	50 (84.7%)	NS	22 (37.3%)	NS	12 (20.3%)	17 (28.8%)	
Zhang et al., 2021	China	RS	UA	98	57.65 ± 12.64	71 (72.5%)	61.26 ± 3.91	55 (58.1%)	NS	18 (18.4%)	40 (40.8%)	8
			NSTEMI	96	62.39 ± 11.87	72 (75.0%)	60.83 ± 4.01	53 (55.2%)	NS	29 (30.2%)	35 (36.5%)	
			STEMI	102	58.54 ± 12.40	77 (75.5%)	58.11 ± 5.64	33 (32.4%)	NS	21 (20.6%)	43 (42.2%)	
Zhang et al., 2023	China	RS	STEMI	604	60.7 ± 14.1	490 (81.1%)	50.9 ± 8.9	370 (61.3%)	NS	147 (24.3%)	297 (49.2%)	8
			NSTEMI	386	63.6 ± 13.3	274 (71.0%)	54.3 ± 9.8	255 (66.1%)	NS	109 (28.2%)	165 (42.7%)	
Zuin et al., 2017	Italy	RS	STEMI	2341	64.42 ± 11.79	1724 (73.6%)	NS	NS	663 (28.3%)	404 (17.3%)	NS	8
			NSTEMI	4219	64.33 ± 11.76	3177 (73.9%)	NS	NS	1200 (28.4%)	597 (14.2%)	NS	