Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Baseline Characteristics of the Included Studies

Author, Ref [#]	Year	N	Male gender, %	Follow-up	Age, years	NYHA class I-II	NYHA class III-IV	Ischemic etiology, %	Previous MI, %	ICD, %	CRT, %	AF, %
Abate E.[1]	2016	1599	77	50 m	60±12	N/A	N/A	100	9	N/A	N/A	N/A
Agricola E. [2]	2009	404	77.7	3.3±2.1 y	70.2±10	N/A	36	76.5	N/A	19.8	11.8	18.3
Agricola E. [3]	2010	198	67	37 m	66±12	N/A	N/A	0	N/A	N/A	N/A	N/A
Aronson D. [4]	2006	1190	83.3	24 m	58±12	N/A	N/A	100	14.6	N/A	N/A	N/A
Barra S. [5]	2012	796	63.2	24 m	68.8±13.4	N/A	N/A	100	26.4	N/A	N/A	35.2
Boriani G. [6]	2012	659	89.5	15 m	66.3±9	19.5	80.5	68	N/A	N/A	N/A	11.5
Bruch C. [7]	2007	370	78	790 d	59±13	N/A	N/A	56	N/A	N/A	N/A	N/A
Bursi F.[8]	2005	773	51.3	4.7 y	69.6±11	N/A	N/A	100	N/A	N/A	N/A	N/A
Bursi F. [9]	2010	469	66.7	5.1 y	59.6±13.3	67.4	32.6	36.2	27.7	16.6	11.7	14.5
Calafiore AM.[10]	2008	4226	82.6	102 m	63.6±9.8	N/A	N/A	100	54.9	N/A	N/A	1.2
Cioffi F. [11]	2005	175	66.3	1 y	75.4±5	33.1	66.9	51.4	N/A	N/A	N/A	30.8
Ellis S.[12]	2002	4221	71.9	3 y	63±11	6.8	3.0	100	53.9	N/A	N/A	N/A
Engstrom AE. [13]	2010	147	63.9	366 d	63.9±14.2	N/A	N/A	100	23.8	N/A	N/A	N/A
Faris R. [14]	2002	337	73.6	43 m	53.2±15	68.2	31.8	0	N/A	N/A	N/A	N/A
Fattouch K. [15]	2010	530	57.3	30 m	64.3±9	75.7	24.3	100	N/A	N/A	N/A	3.2
Feinberg MS. [16]	2000	417	77.9	1 y	61.6±12	N/A	N/A	100	21.8	N/A	N/A	N/A
Garcia-Cosio MD. [17]	2017	1526	78.0	3.4 y	N/A	43.0	57.0	57.0	N/A	N/A	N/A	N/A
Grayburn PA.[18]	2005	336	81.0	42 m	60.5±12.5	0	100	56.5	N/A	N/A	N/A	N/A
Grigioni F. [19]	2001	303	72.9	5 y	70.6±10	57.1	42.9	100	N/A	N/A	N/A	11.6
Grigioni F.[20]	2005	173	78.7	5 y	69.7±10	N/A	N/A	100	N/A	N/A	N/A	10.4
Hickey M. [21]	1988	11848	N/A	6.5 y	N/A	N/A	N/A	100	N/A	N/A	N/A	N/A
Hillis GS. [22]	2005	737	61.0	5 y	72 (61-80)	N/A	N/A	100	22.0	N/A	N/A	N/A
Kajimoto K. (pEF) [23]	2016	1825	53.8	530 d	74.4±13.1	94.7	3.9	33.9	N/A	N/A	N/A	30.7
Kajimoto K. (rEF)[23]	2016	1532	72.1	530 d	67.5±14.6	92.5	5.7	42.6	N/A	N/A	N/A	23.8
Karatolios K. [24]	2015	206	76.0	55.6 m	52.1±12.6	49.0	51.0	0	N/A	N/A	N/A	N/A
Koelling T. [25]	2002	1421	67.7	369 d	61.7±14.7	N/A	N/A	59.3	N/A	13.6	N/A	10.7
Lamas G.[26]	1997	727	83.0	3.5 y	57±10	N/A	N/A	100	N/A	N/A	N/A	N/A
Lancellotti P.[27]	2005	161	66.5	35 m	65±11	N/A	N/A	100	N/A	N/A	N/A	N/A
Lehmann KG. [28]	1992	206	82.5	1 y	57.6	N/A	N/A	100	N/A	N/A	N/A	N/A
Lopez-Perez M.[29]	2014	1036	80.0	2.8 y	61.9±13	N/A	N/A	100	7.3	N/A	N/A	N/A
MacHaalany J. [30]	2014	174	79	366 d	63±12	N/A	N/A	100	10	N/A	N/A	N/A
Mentias A. [31]	2017	4005	55.6	5.9 y	61.9±13	N/A	N/A	100	39	N/A	N/A	N/A
Naser N. [32]	2016	138	61	5 y	62±9	N/A	N/A	100	N/A	N/A	N/A	25
Neskovic AN. [33]	1999	131	72.5	32 m	55±9	N/A	N/A	100	N/A	N/A	N/A	N/A
Nunez-Gil I. [34]	2013	237	73.8	6.95 y	66.1±12.9	N/A	N/A	100	20.7	N/A	N/A	22.4
Pastorius CA. [35]	2007	711	61.7	5 y	63.9±11.5	N/A	N/A	100	47.3	N/A	N/A	N/A
Patel J. [36]	2003	558	76.5	5 y	68.8±10.7	N/A	22.4	55.5	N/A	N/A	N/A	23.5
Pellizzon GG.[37]	2004	1976	62.8	1 y	59.2	N/A	N/A	100	13.3	N/A	N/A	N/A
Perez de Isla L. [38]	2007	279	71.7	418 d	66.3±13.2	N/A	N/A	100	N/A	N/A	N/A	21.9
Persson A. [39]	2010	725	71	98 m	65±10	N/A	N/A	100	20	N/A	N/A	N/A

Rihal C. [40]	1994	102	63.7	36 m	61±14	56.8	43.2	0	N/A	N/A	N/A	18.6
Rossi A. [41]	2011	1256	78.7	2.7 y	67±11	64	36	57.7	N/A	N/A	N/A	N/A
Tcheng JE. [42]	1992	1480	67.3	3 y	57.3	N/A	N/A	100	18.3	N/A	N/A	N/A
Trichon B. [43]	2003	2057	60	5 y	61.6	24.9	75.1	59	35.2	N/A	N/A	N/A
Uddin AM. [44]	2012	888	68.7	3.1 y	62.9±13.2	N/A	N/A	100	17.3	N/A	N/A	N/A
Upadhyay GA. [45]	2015	439	79.5	3 y	70.2(61.1-78.2)	N/A	N/A	58.1	N/A	N/A	N/A	48
Kaneko H. [46]	2014[1]	1701	76.5	1123 d	64.8±12.5	49.4	50.6	0	15.6	N/A	N/A	25.8
Kwon DH. [47]	2016	336	80	54 m	62±11	N/A	N/A	100	N/A	N/A	N/A	N/A
Mallidi HR. [48]	2003	489	65.8	3.4 y	65.3±10	55.5	44.5	100	N/A	N/A	N/A	N/A
Di Mauro M. [49]	2006	239	96.4	62 m	63.9±9.9	N/A	N/A	100	92.9	N/A	N/A	N/A
Okura H. [50]	2008	524	68.9	615 d	68.6±11	N/A	N/A	100	29.3	N/A	N/A	17
Stolfo D. [51]	2015	470	70	6 m	45±14	74	26	0	N/A	N/A	N/A	N/A
Verheart D. [52]	2012	266	69	3.6 y	64.2±11.8	10	90	51	N/A	93	N/A	N/A
Yalonetsky S. [53]	2014	179	61	4.1 y	62.9±10.5	N/A	N/A	100	22.5	N/A	N/A	N/A

LVEF, %	**LVEDD, mm**	**LVESD, mm**	**LA, mm**	**EDV, ml**	**ESV, ml**	**Sphericity index**	**EROA, PISA (cm^2)**	**EROA, Doppler (cm^2)**	**Reg Volume, ml**	**Reg Fraction, %**	**VCW, cm**	**Mitral Decel Time, msec**
47±9	N/A	N/A	N/A	53.3± 15.5*	28.5± 10.9*	N/A	N/A	N/A	N/A	N/A	N/A	212± 74
34.4 ± 10.8	N/A	N/A	N/A	181±65	121±54	N/A	N/A	N/A	N/A	N/A	N/A	184± 83.3
33±9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
47± 12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	54.6± 7.7	38.2±8. 6	38. 6± 10. 2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26±7	N/A	N/A	N/A	223.1±8 8	151.1±81. 5	N/A	N/A	N/A	N/A	N/A	N/A	N/A
31± 10	N/A	N/A	49± 8	116± 45*	82±38*	N/A	N/A	N/A	N/A	N/A	N/A	193± 84
46.4 ±14	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	205.8 ±56
29.7 ±7.9	68.4±9	N/A	46. 5±7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
59.3 ±18	47.6± 10.1	32.3± 8.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29.4 ±7	N/A	N/A	N/A	98.6± 36*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54± 12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	66.7±9	55.9± 11	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	101.7 ±27
43± 10	57.7±7	47.3±4	25. 7±7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
42.5 ± 10.2	50.3±6	34.2±8	37. 3±4	122.9± 45.7	69.4±36.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
24± 10	66±9	59±10	45± 7	114±39	87±36	0.3±0.1	0.15± 0.1	0.06± 0.1	N/A	0.1± 0.45	0.35 ±0.1	165± 68

33.3 ±13	32.5± 5*	27.3±6 *	25. 2± 5*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	189.1 ±61
36.6 ±13	31.8± 5*	26.2± 6*	45. 9±7	N/A	N/A	N/A	N/A	0.11± 0.06	21.2± 12	N/A	N/A	198.6 ±50
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48 (37-58)	51 (48-55)	35 (31-40)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	192 (165-225)
57.3 ± 10.8	49.8± 8.5	34.4± 8.5	43. 4± 8.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
29.2 ±7.6	61.2± 9.6	52.3± 10.1	44. 8± 8.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
30.1 ±8.4	68.2± 7.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20.0 ±5.0	63.0± 10.0	N/A	47± 9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
32.0 ±7.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36±7	N/A	N/A	N/A	144± 30*	93±25*	N/A	0.17± 9	N/A	N/A	N/A	N/A	178± 51
49.4 ± 10.5	N/A	N/A	N/A	70.9± 18*	36.4±12*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
53.9 ±11	48.9±6	33.6±7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46± 12	47±6	35±7	N/A	102±35	57±29	0.55±0.7	N/A	N/A	N/A	N/A	0 (0-0.23)	N/A
45.2 ±13	46.5±8	31.7±9	37. 7±	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
41± 12	53.8± 4.8	33.5± 6.4	44. 2± 4.3	N/A	N/A	0.56±0.7	0.22± 0.16	N/A	42±21	0.48± 0.1	N/A	N/A
45.5 ±11	N/A	N/A	32. 4± 3.5	61.9± 12*	34.9±13*	0.37± 0.08	N/A	N/A	N/A	N/A	N/A	N/A
57.7 ±15	47.9±7	31.8± 8.4	38. 3± 9.6	74.9(54-104.5)	33.4 (21.2-51)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54.1 ± 12.5	48.5± 8.5	34.0± 7.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
21.7 ±7.5	65.7± 10	56.7±11 1	50. 9±8	N/A	N/A	N/A	0.25± 0.1	N/A	28.7± 12	N/A	N/A	159.8 ±41.5
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
55.7 ±16	49.5±9	31.3± 8.9	52± 9.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23±8	69±9	60±9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	172± 66
32±8	63.1±8	53.4± 12	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	166.5 ±65
45.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
48.3 ± 11.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25±8	62±9	54±10	46± 8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
56.8 ±	49.8± 9.1	33.1± 11.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

15.4												
26.7 ± 11.6	N/A	N/A	N/A	N/A	N/A	N/A	0.12± 0.11	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
26.7 ±3.9	N/A	N/A	N/A	118.5± 27*	85±28*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
54.8 ± 13.7	N/A	N/A	39. 1± 7.5	88.7± 38.2	42.6±31.8	N/A	N/A	N/A	N/A	N/A	N/A	208.7 ±69.5
30± 10	36± 17*	30±13*	N/A	101± 38*	73±34*	N/A	N/A	N/A	N/A	N/A	N/A	N/A
25±9	N/A	N/A	N/A	N/A	94±40	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	40. 5±5	N/A	N/A	2.01	N/A	N/A	N/A	N/A	N/A	N/A

Abbreviation list. BMI: body mass index; MI: myocardial infarction; CKD: chronic kidney disease; COPD: chronic obstructive pulmonary disease; ICD: implantable cardioverter-defibrillator; AF: atrial fibrillation; CRT: cardiac resynchronization therapy; LVEF: left ventricle ejection fraction; LVEDD: left ventricle end-diastolic diameter; LVESD: left ventricle end-systolic diameter; LA: left atrium; EDV: end-diastolic volume; ESV: end-systolic volume; EROA: effective regurgitant orifice area; VCW: vena contracta width. *refers to measures indexed for body surface area.

eTable 2. Data Extraction and Relative Adjustment for the Primary Outcome (All-Cause Mortality)

Authors, Ref[#]	All-cause mortality (SMR yes/no)		All-cause mortality (Qualitative SMR assessment)		All-cause mortality (Quantitative SMR assessment)	
Abate E. [1]	-	-	-	-	6.59 [4.09-10.61]	Adjusted (Multivariate)
Agricola E. [2]	-	-	-	-	50% vs 36%	Unadjusted
Agricola E. [3]	48.4% vs 28.5%	Unadjusted	-	-	2.1 [1.2-3.6]	Adjusted (Multivariate)
Aronson D.[4]	16.2% vs 6.5%	Unadjusted	2.0 [1.2-3.4]	Adjusted (Multivariate)	-	-
Barra S. [5]	1.42 [1.028-1.957]	Adjusted (Multivariate)	38.5%, 37.5%, 21.7% vs 12.0%	Unadjusted	-	-
Boriani G. [6]	-	-	0.9 [0.5-1.5]	Unadjusted	-	-
Bruch C. [7]	-	-	-	-	2.42 [1.43-4.13]	Adjusted (Multivariate)
Bursi F. [8]	-	-	1.55 [1.08-2.22]	Adjusted (Multivariate)	-	-
Calafiore AM. [10]	1.03 [0.81-1.31]	Adjusted (Multivariate)	-	-	-	-
Cioffi F. [11]	-	-	4.47 [1.54-13.01]	Adjusted (Multivariate)	-	-
Di Mauro M. [49]	-	-	2.2 [1.11-4.34]	Adjusted (Multivariate)	-	-
Ellis S. [12]	-	-	31.4%, 25.4%, 15.4% vs 7.7%	Unadjusted	-	-
Engstrom AE. [13]	1.71 [1.02-2.87]	Adjusted (Multivariate)	57.9%, 30.0%, 22.6% vs7.7%	Unadjusted	-	-
Faris R. [14]	1.8 [1.1-3.2]	Adjusted (Multivariate)	-	-	-	-
Fattouch K. [15]	-	-	-	-	2.7 [1.5-4.8]	Adjusted (Multivariate)
Feinberg MS. [16]	-	-	2.31 [1.03-5.20] 2.85 [0.95-8.51]	Adjusted (Multivariate) Adjusted (Multivariate)	-	-
Garcia-Cosio MD.[17]	-	-	1.54 [1.14-2.08]	Adjusted (Multivariate)	-	-
Grigioni F. [19]	1.88 [1.23-2.86]	Adjusted (Multivariate)	-	-	2.23 [1.31-3.79] (EROA)	Adjusted (Multivariate)

					2.05 [1.30-3.23](RegV)	Adjusted (Multivariate)
Hickey M. [21]	X^2 9	Adjusted (Multivariate)	-	-	-	-
Hillis GS. [22]	-	-	0.98 [0.66-1.44] Adjusted (Multivariate) 1.06 [0.64-1.76] Adjusted (Multivariate) 1.62 [0.80-3.28]	Adjusted (Multivariate)	-	-
Kaneko H. [46]	-	-	2.179 [1.266-3.751]	Adjusted (Multivariate)	-	-
Koelling T. [25]	-	-	1.845 [1.429-2.382]	Adjusted (Multivariate)	-	-
Lehmann KG. [28]	3.7 [1.1-12.1]	Adjusted (Multivariate)	-	-	-	-
Lopez-Perez M. [29]	-	-	3.1 [1.34-7.2]	Adjusted (Multivariate)	-	-
MacHaalany J. [30]	2.5% vs 0%	Unadjusted	5.2%, 1.6% vs 0%	Unadjusted	-	-
Mallidi HR. [48]	0.958 [0.73-1.27]	Adjusted (Multivariate)	-	-	-	-
Mentias A. [31]	-	-	1.28 [1.07-1.52] Adjusted (Multivariate) 2.35 [1.80-3.08] Adjusted (Multivariate) 2.54-1.62-3.97]	Adjusted (Multivariate)	-	-
Naser N. [32]	-	-	-	-	54.2% vs 27.2% (EROA) 57.1% vs29.1% (RegV)	Unadjusted Unadjusted
Neskovic AN. [33]	14% vs 6%	Unadjusted	-	-	-	-
Okura H. [50]	-	-	27.6% vs 10.1%	Unadjusted	-	-
Pastorius CA. [35]	1.57 [1.20-2.05]	Adjusted (Multivariate)	-	-	-	-
Patel J. [36]	-	-	-	-	X^2 0.47	Unadjusted
Pellizzon GG. [37]	4.8% vs 1.4%	Unadjusted	-	-	-	-
Persson A. [39]	-	-	1.53 [1.06-2.19]	Adjusted (Multivariate)	-	-

Rihal C. [40]	-	-	1.30 [0.67-2.53]	Adjusted (Multivariate)	-	-
Rossi A. [41]	-	-	-	-	1.8 [1.3-2.6] (EROA) 2.0 [1.3-2.6] (RegV)	Adjusted (Multivariate) Adjusted (Multivariate)
Tcheng JE. [42]	1.48 [1.21-1.83]	Adjusted (Multivariate)	-	-	-	-
Trichon B. [43]	1.234 [1.134-1.343]	Adjusted (Multivariate)	-	-	-	-
Uddin AM. [44]	-	-	1.10 [0.7-1.73] 1.27 [0.72-2.17]	Adjusted (Multivariate) Adjusted (Multivariate)	-	-
Upadhyay GA. [45]	1.329 [1.011-1.748]	Adjusted (Multivariate)	-	-	-	-
Yalonetsky S. [53]	-	-	3.57 [1.62-7.84]	Adjusted (Multivariate)	-	-

Abbreviation list. SMR, functional mitral regurgitation .

eTable 3. Values of LVEF and LVESV According to SMR Grade in the Included Studies

	LVEF, %				LVESVi, ml or LVESV, ml			
Author, Ref [#]	**None/trace SMR**	**Mild SMR**	**Moderate/severe SMR**	**P value**	**None/trace SMR**	**Mild SMR**	**Moderate/severe SMR**	**P value**
Abate E.[1]	-	47±9	43±10	<0.001	-	32.9±14.6	28.1±10.4	<0.001
Agricola E. [2]	-	-	-	-	-	-	-	-
Agricola E. [3]	-	-	-	-	-	-	-	-
Aronson D. [4]	47±12	43±12	39±11	<0.001	-	-	-	-
Barra S. [5]	-	-	-	-	-	-	-	-
Boriani G. [6]	-	26±7	26±7	0.602	-	153±84	150±79	0.802
Bruch C. [7]	-	31±10	29±9*	0.102	-	79±35	91±45*	0.026
Bursi F. [8]	49±13	45±14	40±15	<0.001	-	-	-	-
Bursi F. [9]	32.2±7.8	29.7±7.9	27.1±7.2	0.001	-	-	-	-
Calafiore AM.[10]	59.4±11.7	59.2±12.7		0.600	-	-	-	-
Cioffi F. [11]	30±7		27±6	0.04	-	-	-	-
Ellis S.[12]	56±11	48±14	42±15	<0.001	-	-	-	-
Engstrom AE. [13]	-	-	-	-	-	-	-	-
Faris R. [14]	-	-	-	-	-	-	-	-
Fattouch K. [15]	43±8		43±12	0.21	-	-	-	-
Feinberg MS. [16]	44±13	45±9	43±10	0.61	70±29	66±28	79±52	0.18
Garcia-Cosio MD. [17]	-	-	-	-	-	-	-	-
Grayburn PA.[18]	-	-	-	-	-	-	-	-
Grigioni F. [19]	34±11	33±14		0.14	-	-	-	-
Grigioni F.[20]	36±11	37±14		0.92	-	-	-	-
Hickey M. [21]	-	-	-	-	-	-	-	-
Hillis GS. [22]	55 (48-60)	50 (38-58)	35 (27-53)	<0.001	-	-	-	-
Kajimoto K. (pEF) [23]	58.4±10.7	57.2±10.6	56.0±11.2	0.005	-	-	-	-
Kajimoto K. (rEF)[23]	30.4±7.4	29.1±7.7	28.6±7.4	0.011	-	-	-	-
Karatolios K. [24]	-	-	-	-	-	-	-	-
Koelling T. [25]	21±5	20±5	19±5	0.001	-	-	-	-
Lamas G.[26]	32±7	31±7		0.471	120±47	148±65		<0.001
Lancellotti P.[27]	-	-	-	-	-	-	-	-
Lehmann KG. [28]	50.2±10.1	44.5±7.3	44.0±11.4	<0.01	36±12	39±11	41±12	ns
Lopez-Perez M.[29]	57±10	53±11	46±14	<0.001	-	-	-	-
MacHaalany J. [30]	48±1	45±2	41±3	0.03	53±3	59±4	66±7	0.16
Mentias A. [31]	46±12	43±13	40±14	<0.001	-	-	-	-
Naser N. [32]	-	-	-	-	-	-	-	-
Neskovic AN. [33]	47±11	43±11		ns	33.12	38±13		<0.05
Nunez-Gil I. [34]	59.3±17.0	51.1±14.7		0.05	31.0 (21.2-44.0)	37.0 (21.5-51.0)		0.25
Pastorius CA. [35]	57.4±9.6	51.0±11	45±14.5	<0.001	-	-	-	-
Patel J. [36]	24±8	23±9	19±6	<0.001	-	-	-	-
Pellizzon GG.[37]	58 (49-65)	53 (39-59)	51 (45-68)	0.0004	-	-	-	-
Perez de Isla L. [38]	58.5±17.6	51.1±15.5		0.001	-	-	-	-
Persson A. [39]	-	-	-	-	-	-	-	-
Rihal C. [40]	-	-	-	-	-	-	-	-

Rossi A. [41]	34±8	33±8	29±8	<0.0001	-	-	-	-
Tcheng JE. [42]	47 (40-54)	39 (33-49)	35 (29-44)	<0.001	-	-	-	-
Trichon B. [43]	28 (22-34)	25 (19-32)	25 (20-33)	0.001	-	-	-	-
Uddin AM. [44]	50±11	47±12	44±14	<0.0001	-	-	-	-
Upadhyay GA. [45]	-	-	-	-	-	-	-	-
Kaneko H. [46]	58.6±16.8	28.6±14.0		<0.001	-	-	-	-
Kwon DH. [47]	-	-	-	-	-	-	-	-
Mallidi HR. [48]	-	-	-	-	-	-	-	-
Di Mauro M. [49]	26.5±3.7		26.8±4.1	Ns	82±22		87±34	ns
Okura H. [50]	56.3±12.8		43.0±14.6	<0.0001	39.0±25.6		71.5±37.9	<0.0001
Stolfo D. [51]	34±10	25±8	28±9	<0.001	60±27	91±38	86±36	<0.001
Verheart D. [52]	-	-	-	-	-	-	-	-
Yalonetsky S. [53]	-	-	-	-	-	-	-	-

Abbreviation list. LVEF, left ventricle ejection fraction; LVESV, left ventricle end-systolic volume; SMR, secondary mitral regurgitation.

eTable 4. SMR Detection and Quantitation Methods Used in the Included Studies and Relative Study Population

Author, Ref [#]	MR quantitation method	MR grading	Study population
Abate E.[1]	Echocardiography	VCW and PISA	First STEMI
Agricola E. [2]	Echocardiography	VCW and PISA	Ischemic and non-ischemic LV dysfunction
Agricola E. [3]	Echocardiography	VCW and PISA	Non-ischemic LV dysfunction (EF<50%)
Aronson D. [4]	Echocardiography	Maximum regurgitant jet area	Acute MI
Barra S. [5]	Echocardiography	Maximum regurgitant jet area	First STEMI
Boriani G. [6]	Echocardiography	Maximum regurgitant jet area	CHF
Bruch C. [7]	Echocardiography	EROA	CHF
Bursi F.[8]	Echocardiography	maximum regurgitant jet area	>30 days after acute MI
Bursi F. [9]	Echocardiography	maximum regurgitant jet area	CHF
Calafiore AM.[10]	Echocardiography	Maximum regurgitant jet area ,VCW and PISA	Patients undergoing CABG
Cioffi F. [11]	Echocardiography	Maximum regurgitant jet area	CHF with EF<40%
Ellis S.[12]	Left ventriculography and echocardiography	MR present/absent Maximum regurgitant jet area	Stable patients undergoing PCI
Engstrom AE. [13]	Echocardiography	Maximum regurgitant jet area and VCW	First STEMI
Faris R. [14]	Echocardiography	Maximum regurgitant jet area	Idiopathic DCM
Fattouch K. [15]	Echocardiography	EROA	Patients undergoing CABG
Feinberg MS. [16]	Echocardiography	Maximum regurgitant jet area	First MI within 48 h of MI
Garcia-Cosio MD. [17]	Echocardiography	Maximum regurgitant jet area	Symptomatic CHF with EF<40%
Grayburn PA.[18]	Echocardiography	VCW and EROA	Advanced CHF due to systolic dysfunction
Grigioni F. [19]	Echocardiography	Reg Volume and EROA	History of Q-wave MI > 16 days
Grigioni F.[20]	Echocardiography	Reg Volume and EROA	History of Q-wave MI > 16 days
Hickey M. [21]	Left ventriculography	MR present/absent	NSTEMI
Hillis GS. [22]	Echocardiography	Maximum regurgitant jet area ,VCW and PISA	Acute MI
Kajimoto K. (pEF) [23]	Echocardiography	Maximum regurgitant jet area	Acute decompensated HF- pEF
Kajimoto K. (rEF)[23]	Echocardiography	Maximum regurgitant jet area	Acute decompensated HF- rEF
Karatolios K. [24]	Echocardiography	Visual	non-ischemic DCM
Koelling T. [25]	Echocardiography	Maximum regurgitant jet area	Advanced CHF with EF≤35%
Lamas G.[26]	Left ventriculography	MR present/absent	History of Q-wave MI < 16 days
Lancellotti P.[27]	Echocardiography	EROA	Chronic ischemic LV dysfunction
Lehmann KG. [28]	Left ventriculography	MR present/absent	First MI within 7 h of onset
Lopez-Perez M.[29]	Echocardiography	Maximum regurgitant jet	First STEMI

		area	
MacHaalany J. [30]	Echocardiography	Maximum regurgitant jet area and VCW	First STEMI
Mentias A. [31]	Echocardiography	Maximum regurgitant jet area	First STEMI
Naser N. [32]	Echocardiography	Reg Volume and EROA	History of Q-wave MI > 16 days
Neskovic AN. [33]	Echocardiography	Maximum regurgitant jet area	First STEMI
Nunez-Gil I. [34]	Echocardiography	EROA	NSTEMI
Pastorius CA. [35]	Left ventriculography and echocardiography	MR present/absent Maximum regurgitant jet area	Patients undergoing PCI for acute MI
Patel J. [36]	Echocardiography	PISA and continuity equation	Advanced CHF with EF≤35% and NYHA 3-4
Pellizzon GG.[37]	Left ventriculography	MR present/absent	Patients undergoing PCI for acute MI
Perez de Isla L. [38]	Echocardiography	EROA	NSTEMI
Persson A. [39]	Echocardiography	Color and continuous wave Doppler	Acute coronary syndromes
Rihal C. [40]	Echocardiography	Maximum regurgitant jet area	Idiopathic DCM
Rossi A. [41]	Echocardiography	Reg Volume,EROA, VCW	Ischemic and idiopathic DCM
Tcheng JE. [42]	Left ventriculography	MR present/absent	Acute MI
Trichon B. [43]	Left ventriculography	MR present/absent	Advanced CHF with EF≤40% and NYHA 3-4
Uddin AM. [44]	Echocardiography	Maximum regurgitant jet area	First STEMI
Upadhyay GA. [45]	Echocardiography	Maximum regurgitant jet area ,VCW and PISA	LV dysfunction undergoing CRT
Kaneko H. [46]	Echocardiography	Maximum regurgitant jet area	CHF
Kwon DH. [47]	Echocardiography	EROA	Ischemic DCM
Mallidi HR. [48]	Left ventriculography	MR present/absent	Patients undergoing CABG
Di Mauro M. [49]	Echocardiography	Maximum regurgitant jet area	Ischemic DCM
Okura H. [50]	Echocardiography	Maximum regurgitant jet area	Ischemic DCM
Stolfo D. [51]	Echocardiography	EROA and VCW	Idiopathic DCM
Verheart D. [52]	Echocardiography	VCW	DCM
Yalonetsky S. [53]	Echocardiography	Maximum regurgitant jet area , PISA and EROA	STEMI

Abbreviation list. EROA, effective regurgitant orifice area; MR, mitral regurgitation; VCW, Vena Contracta Width; PISA, proximal isovelocity surface area; STEMI, ST elevation myocardial infraction; CHF, chronic heart failure; EF, ejection fraction; MI, myocardial infarction; NYHA, New York Herat Association; CRT, cardiac resynchronization therapy; DCM, dilative cardiomyopathy; PCI, percutaneous coronary intervention; NSTEMI, non-ST elevation myocardial infarction; CABG, coronary artery by-pass graft.

eTable 5. Newcastle-Ottawa Quality Assessment Scale

Author, Ref [#]	Selection		Comparability		Outcome	
	Points (max 4)	Risk of bias	Points (max 2)	Risk of bias	Points (max 3)	Risk of bias
Abate E.[1]	3	Medium	2	Low	3	Low
Agricola E. [2]	3	Medium	2	Low	2	Medium
Agricola E. [3]	2	Medium	2	Low	1	High
Aronson D. [4]	4	Low	2	Low	2	Medium
Barra S. [5]	3	Medium	2	Low	2	Medium
Boriani G. [6]	4	Low	1	Medium	2	Medium
Bruch C. [7]	3	Medium	2	Low	2	Medium
Bursi F.[8]	4	Low	2	Low	3	Low
Bursi F. [9]	3	Medium	2	Low	3	Low
Calafiore AM.[10]	4	Low	2	Low	3	Low
Cioffi F. [11]	4	Low	2	Low	2	Medium
Ellis S.[12]	3	Medium	2	Low	1	High
Engstrom AE. [13]	4	Low	2	Low	1	High
Faris R. [14]	4	Low	2	Low	2	Medium
Fattouch K. [15]	4	Low	2	Low	3	Low
Feinberg MS. [16]	4	Low	2	Low	3	Low
Garcia-Cosio MD. [17]	4	Low	2	Low	1	High
Grayburn PA.[18]	4	Low	2	Low	3	Low
Grigioni F. [19]	4	Low	2	Low	3	Low
Grigioni F.[20]	4	Low	2	Low	2	Medium
Hickey M. [21]	4	Low	2	Low	3	Low
Hillis GS. [22]	4	Low	2	Low	1	High
Kajimoto K. (pEF) [23]	4	Low	2	Low	3	Low
Kajimoto K. (rEF)[23]	4	Low	2	Low	3	Low
Karatolios K. [24]	3	Medium	2	Low	2	Medium
Koelling T. [25]	4	Low	2	Low	3	Low
Lamas G.[26]	4	Low	2	Low	3	Low
Lancellotti P.[27]	4	Low	2	Low	2	Medium
Lehmann KG. [28]	4	Low	2	Low	3	Low
Lopez-Perez M.[29]	4	Low	2	Low	2	Medium
MacHaalany J. [30]	4	Low	2	Low	2	Medium
Mentias A. [31]	4	Low	2	Low	2	Medium
Naser N. [32]	2	Medium	1	Medium	3	Low
Neskovic AN. [33]	2	Medium	2	Low	3	Low
Nunez-Gil I. [34]	3	Medium	2	Low	3	Low
Pastorius CA. [35]	4	Low	2	Low	3	Low
Patel J. [36]	4	Low	2	Low	3	Low
Pellizzon GG.[37]	4	Low	2	Low	2	Medium
Perez de Isla L. [38]	4	Low	2	Low	2	Medium
Persson A. [39]	4	Low	2	Low	2	Medium
Rihal C. [40]	4	Low	2	Low	3	Low
Rossi A. [41]	3	Medium	2	Low	2	Medium

Tcheng JE. [42]	4	Low	2	Low	3	Low
Trichon B. [43]	3	Medium	2	Low	2	Medium
Uddin AM. [44]	4	Low	2	Low	2	Medium
Upadhyay GA. [45]	3	Medium	1	Medium	2	Medium
Kaneko H. [46]	4	Low	2	Low	2	Medium
Kwon DH. [47]	4	Low	2	Low	2	Medium
Mallidi HR. [48]	4	Low	2	Low	2	Medium
Di Mauro M. [49]	4	Low	2	Low	3	Low
Okura H. [50]	3	Medium	2	Low	2	Medium
Stolfo D. [51]	4	Low	2	Low	1	High
Verheart D. [52]	4	Low	2	Low	2	Medium
Yalonetsky S. [53]	3	Medium	2	Low	2	Medium

Two independent reviewers undertook quality assessment and allocated stars/points for adherence to following criteria:

• Selection (adequate selection and definition of groups)

• Comparability (comparability of two groups for a selected variable and comparability for other variables)

• Outcome (modality of assessment, enough length of follow-up and adequacy of follow-up)

Studies with 4 stars for selection, 2 for comparability, and 3 for outcome were defined at low risk of bias. Studies with 2 or 3 stars for selection, 1 for comparability, and 2 for outcome were defined at medium risk. Any study with a score of 1 for selection or outcome ascertainment, or 0 for any of the three domains, was deemed at high risk of bias.

eTable 6. Leave-One-Out Sensitivity Analysis for the Primary End Point (Results After Removing 1 Study at a Time)

Authors, Ref[#]	All-cause mortality (SMR yes/no)		All-cause mortality (Qualitative SMR assessment)		All-cause mortality (Quantitative SMR assessment)	
	RR [95% CI]	p value	RR [95% CI]	p value	RR [95% CI]	p value
Abate E. [1]	-	-	-	-	2.01 [1.73-2.32]	<0.00001
Agricola E. [2]	-	-	-	-	2.00 [1.72-2.32]	<0.00001
Agricola E. [3]	1.76 [1.44-2.16]	<0.00001	-	-	1.97 [1.70-2.28]	<0.00001
Aronson D.[4]	1.72 [1.41-2.10]	<0.00001	2.00 [1.69-2.37]	<0.00001	-	-
Barra S. [5]	1.83 [1.48-2.26]	<0.00001	1.87 [1.59-2.20]	<0.00001	-	-
Boriani G. [6]	-	-	2.01 [1.71-2.36]	<0.00001	-	-
Bruch C. [7]	-	-	-	-	1.94 [1.68-2.25]	<0.00001
Bursi F. [8]	-	-	2.04 [1.73-2.41]	<0.00001	-	-
Calafiore AM. [10]	1.88 [1.52-2.33]	<0.00001	-	-	-	-
Cioffi F. [11]	-	-	1.94 [1.65-2.28]	<0.00001	-	-
Di Mauro M. [49]	-	-	1.96 [1.66-2.31]	<0.00001	-	-
Ellis S. [12]	-	-	1.83 [1.56-2.14]	<0.00001	-	-
Engstrom AE. [13]	1.80 [1.46-2.21]	<0.00001	1.90 [1.62-2.23]	<0.00001	-	-
Faris R. [14]	1.79 [1.46-2.20]	<0.00001	-	-	-	-
Fattouch K. [15]	-	-	-	-	1.93 [1.67-2.24]	<0.00001
Feinberg MS. [16]	-	-	1.95 [1.65-2.30]	<0.00001	-	-
Garcia-Cosio MD.[17]	-	-	1.99 [1.68-2.35]	<0.00001	-	-
Grigioni F. [19]	1.78 [1.45-2.20]	<0.00001	-	-	1.96 [1.66-2.31]	<0.00001
Hickey M. [21]	1.88 [1.49-2.38]	<0.00001	-	-	-	-
Hillis GS. [22]	-	-	2.07 [1.75-2.45]	<0.00001	-	-
Kaneko H. [46]	-	-	1.96 [1.66-2.31]	<0.00001	-	-
Koelling T. [25]	-	-	1.98 [1.67-2.35]	<0.00001	-	-
Lehmann KG. [28]	1.76 [1.44-2.15]	<0.00001	-	-	-	-

Lopez-Perez M. [29]	-	-	1.94 [1.65-2.29]	<0.00001	-	-
MacHaalany J. [55]	1.78 [1.46-2.17]	<0.00001	1.95 [1.66-2.29]	<0.00001	-	-
Mallidi HR. [48]	1.89 [1.53-2.32]	<0.00001	-	-	-	-
Mentias A. [31]	-	-	1.98 [1.66-2.37]	<0.00001	-	-
Naser N. [32]	-	-	-	-	1.90 [1.64-2.20]	<0.00001
Neskovic AN. [33]	1.78 [1.45-2.17]	<0.00001	-	-	-	-
Okura H. [50]	-	-	1.93 [1.64-2.27]	<0.00001	-	-
Pastorius CA. [35]	1.82 [1.47-2.25]	<0.00001	-	-	-	-
Patel J. [36]	-	-	-	-	2.06 [1.78-2.38]	<0.00001
Pellizzon GG. [37]	1.61 [1.36-1.91]	<0.00001	-	-	-	-
Persson A. [39]	-	-	1.99 [1.68-2.35]	<0.00001	-	-
Rihal C. [40]	-	-	1.99 [1.69-2.34]	<0.00001	-	-
Rossi A. [41]	-]	-	-	-	2.03 [1.70-2.42]	<0.00001
Tcheng JE. [42]	1.65 [1.37-1.97]	<0.00001	-	-	-	-
Trichon B. [43]	1.90 [1.49-2.43]	<0.00001	-	-	-	-
Uddin AM. [44]	-	-	2.03 [1.72-2.40]	<0.00001	-	-
Upadhyay GA. [45]	1.84 [1.49-2.29]	<0.00001	-	-	-	-
Yalonetsky S. [53]	-	-	1.94 [1.65-2.28]	<0.00001	-	-

Abbreviation list. SMR, functional mitral regurgitation; RR, risk ratio.

eTable 7. Additional Sensitivity Analysis for the Primary Outcome

	All-cause mortality											
	SMR present vs absent detected either at echocardiography or ventriculography				SMR detected at echocardiography and qualitatively graded.				SMR detected at echocardiography and quantitatively graded			
	Studies	n	RR [95% CI]	P	Studies	n	RR [95% CI]	P	Studies	n	RR [95% CI]	P
Removal of studies at low risk of bias	5	3637	1.6 [1.17-1.59]	<0.001	8	8789	2.61 [1.89-3.60]	<0.0001	5	2366	2.17 [1.76-2.68]	<0.0001
Removal of studies with moderate-high risk of bias	12	23071	2.12 [1.52-2.96]	<0.001	15	13583	1.65 [1.41-1.93]	<0.00001	4	2990	1.86 [1.43-2.42]	<0.00001
Removal of studies with PISA assessment of SMR	-	-	-	-	-	-	-	-	3	358	2.17 [1.62-2.89]	<0.00001
Removal of studies reporting unadjusted estimates	12	22999	1.47 [1.24-1.73]	<0.00001	16	13693	1.62 [1.40-1.88]	<0.00001	6	4256	2.02 [1.72-2.38]	<0.00001

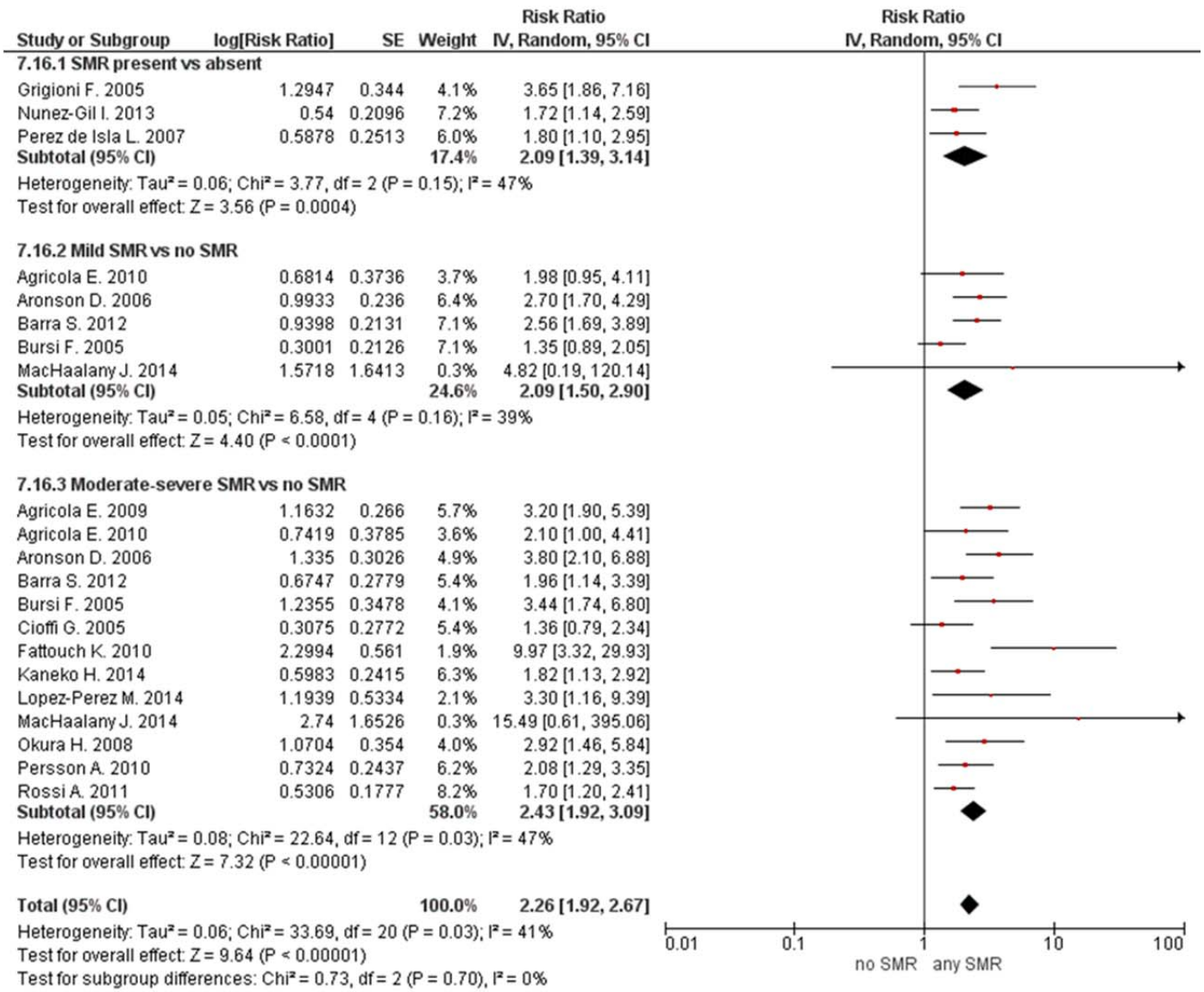
Abbreviation list. SMR, functional mitral regurgitation; RR, risk ratio.

eTable 8. Meta-regression Analysis for All-Cause Mortality

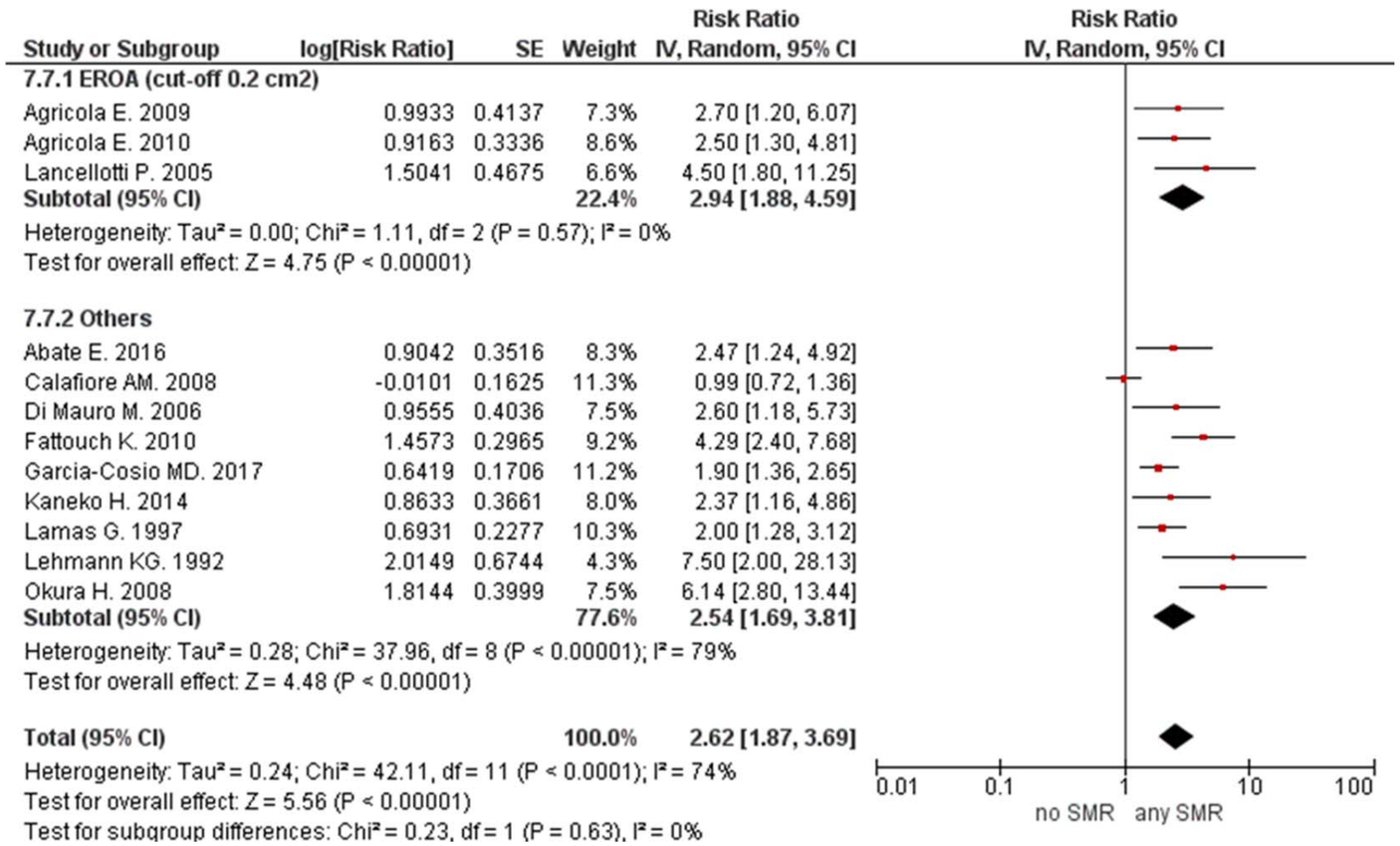
	All-cause mortality (SMR yes/no)			All-cause mortality (Qualitative SMR assessment)			All-cause mortality (Quantitative SMR assessment)		
Variable	**Slope**	**p**	**n**	**Slope**	**p**	**n**	**Slope**	**p**	**n**
Age	-0.03	0.250	14	-0.01	0.732	21	-0.03	0.129	9
Atrial Fibrillation	0.00	0.705	4	0.01	0.287	12	0.00	0.990	6
EDV (ml)	0.03	0.603	3	-0.01	0.227	9	-	-	-
ESV (ml)	0.03	0.790	3	-0.01	0.221	8	-	-	-
Ischemic etiology	-0.00	0.623	15	0.00	0.244	21	-0.00	0.743	7
Left Atrium dimension (mm)	-0.02	0.106	4	-0.03	0.178	13	-0.00	0.865	4
LVEDD (mm)	-0.00	0.777	7	-0.03	0.139	20	-0.01	0.366	4
LVESD (mm)	0.00	0.915	7	-0.02	0.277	19	-0.01	0.128	4
LVEF (%)	0.00	0.904	7	0.01	0.170	21	0.05	0.028	7
Male gender (%)	0.01	0.440	13	0.00	0.522	21	-0.03	0.057	7
Mitral Deceleration Time (msec)	-	-	-	-0.00	0.994	10	0.01	0.267	4
NYHA I/II	0.01	0.667	4	-0.01	0.424	9	-0.02	0.231	2
NYHA III/IV	-0.01	0.667	4	**-0.01**	**0.036**	**10**	0.03	0.005	4
Number of patients	-0.00	0.084	15	-0.00	0.786	21	-0.00	0.174	6
Previous MI	-0.02	0.046	7	-0.00	0.925	21	-	-	-
Length of Follow-up	**-0.01**	**0.047**	**15**	**-0.01**	**0.030**	**26**	-0.00	0.607	7

Abbreviation list. EDV, end-diastolic volume; ESV, end-systolic volume; LVEDD, left ventricle end-diastolic diameter; LVESD, left ventricle end-systolic diameter; NYHA, New York Class Association; MI, myocardial infarction.

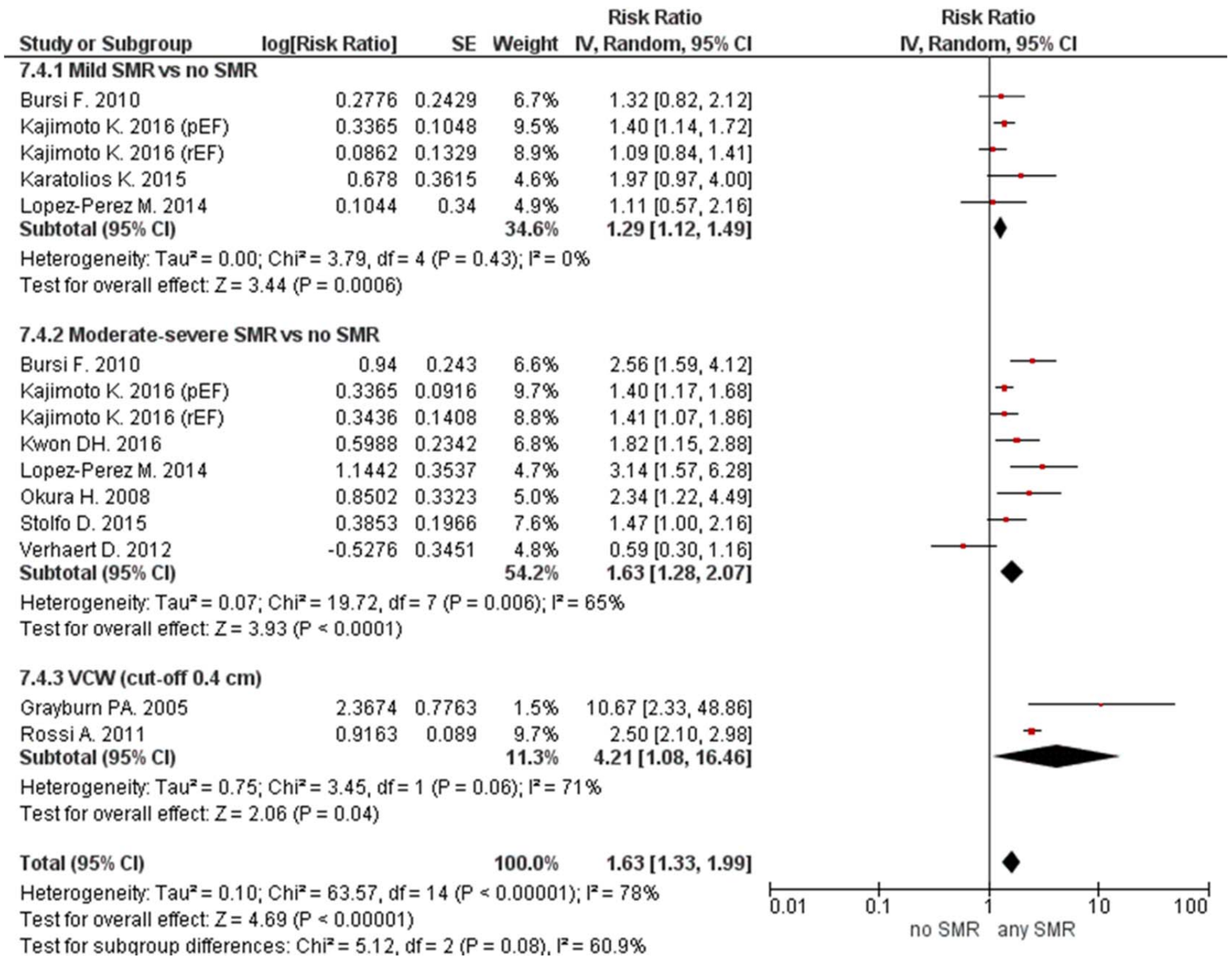
Supplementary Figure 1.



Supplementary Figure 2.

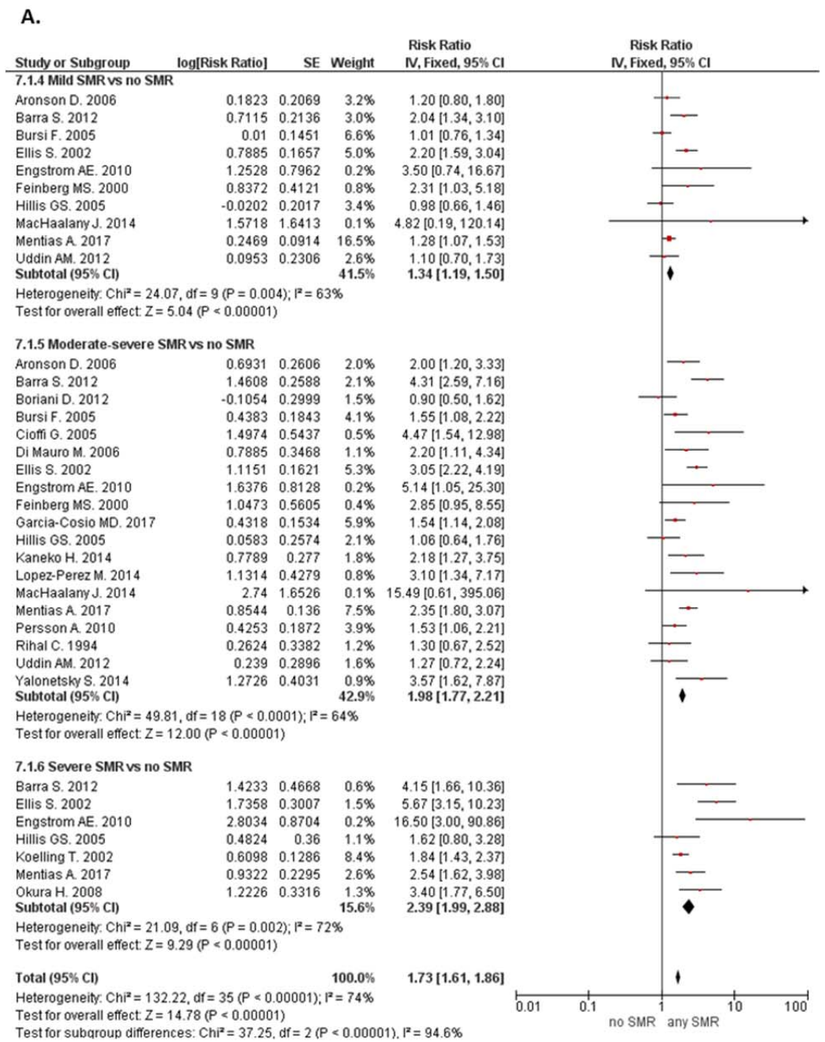


Supplementary Figure 3.



Supplementary Figure 4.

A.



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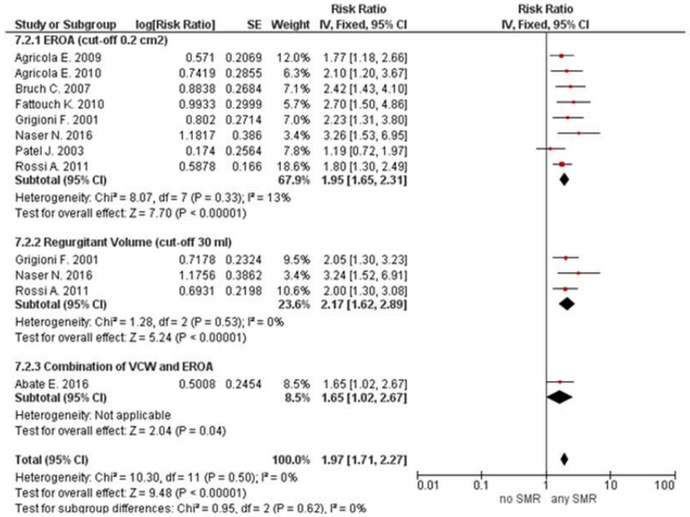

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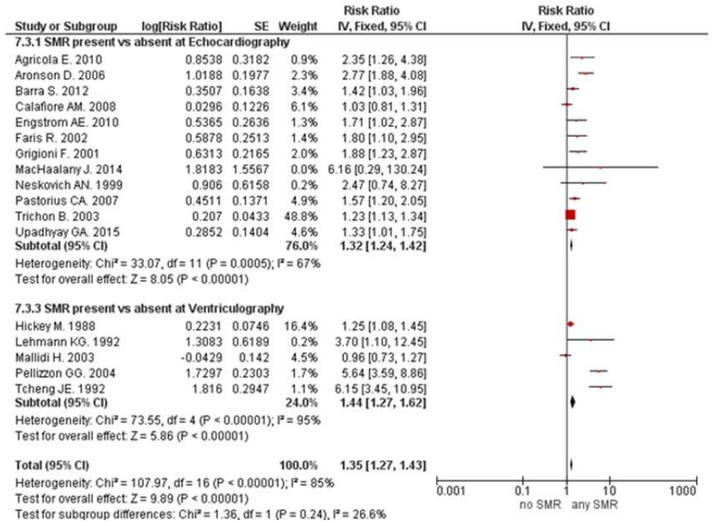
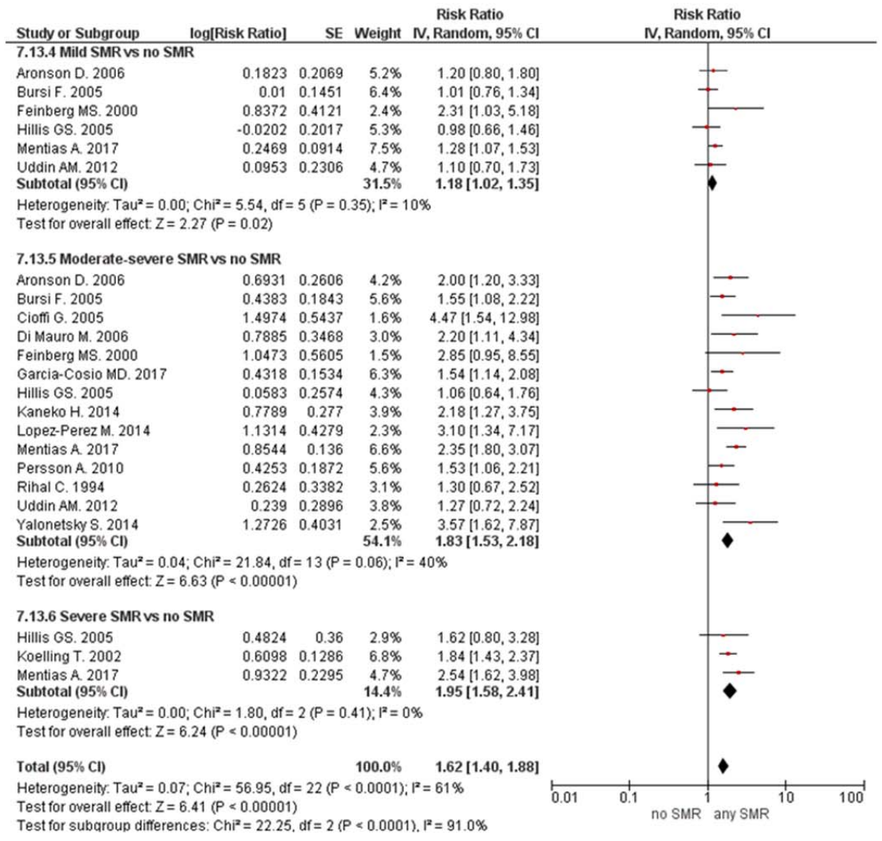


Supplementary Figure 5.

A.



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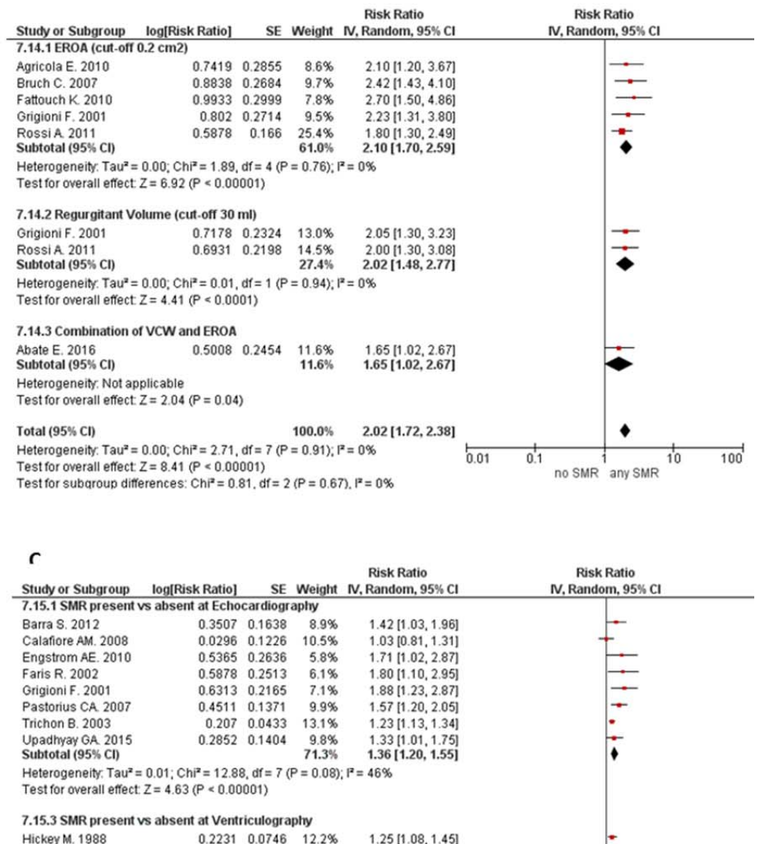

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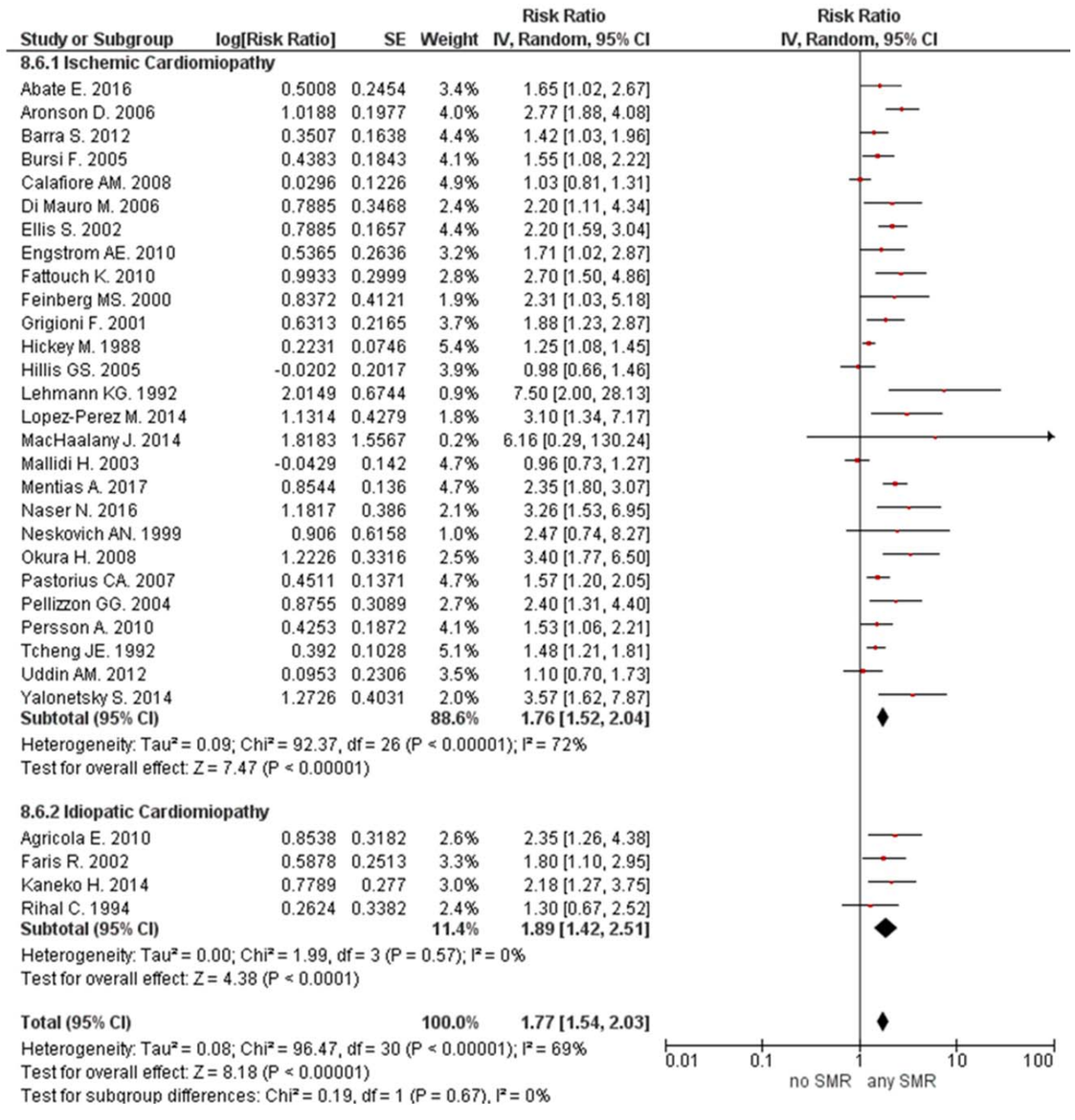
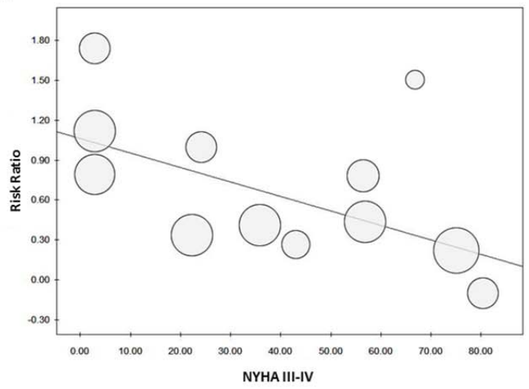
Supplementary Figure 6.



Supplementary Figure 7.

A.



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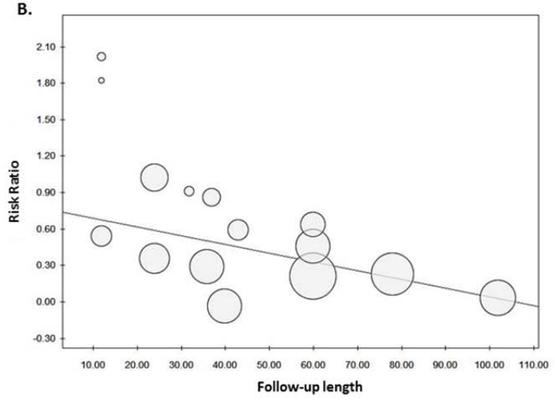

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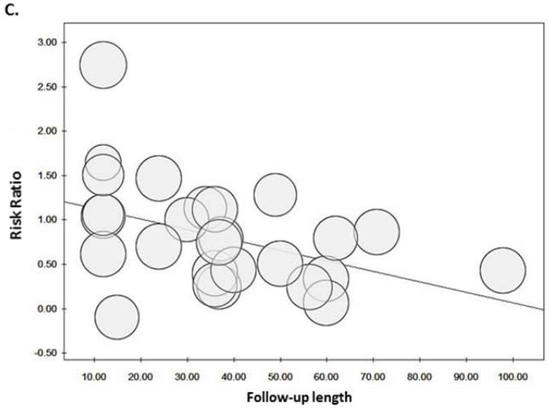
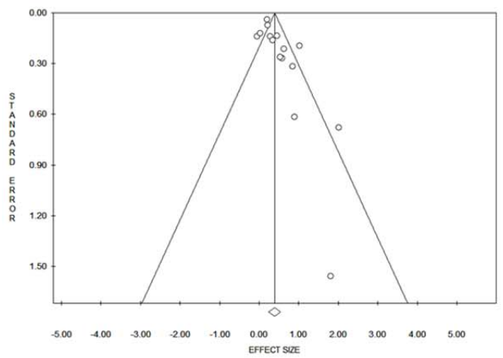
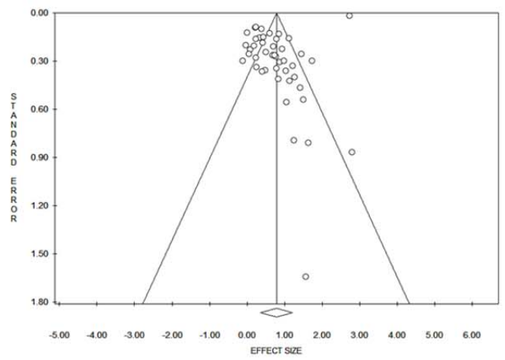


Supplementary Figure 8.

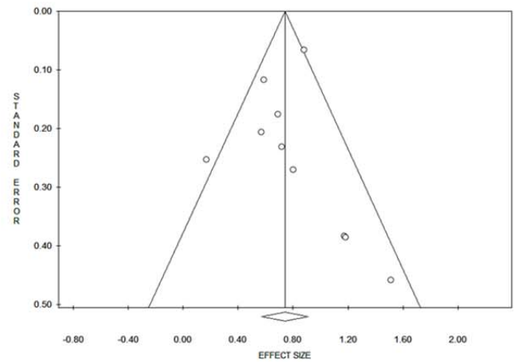
A. SMR present/absent.



B. Qualitative SMR assessment.

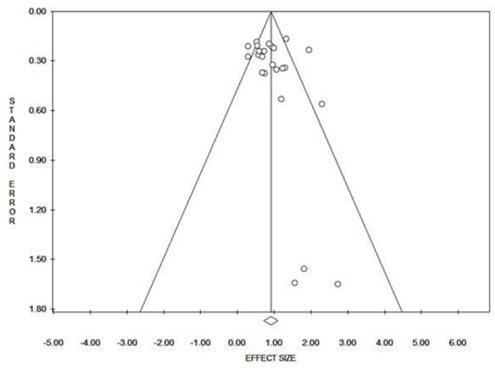


C. Quantitative SMR assessment.

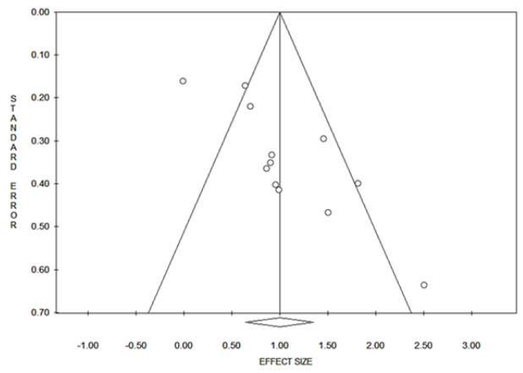


Supplementary Figure 9.

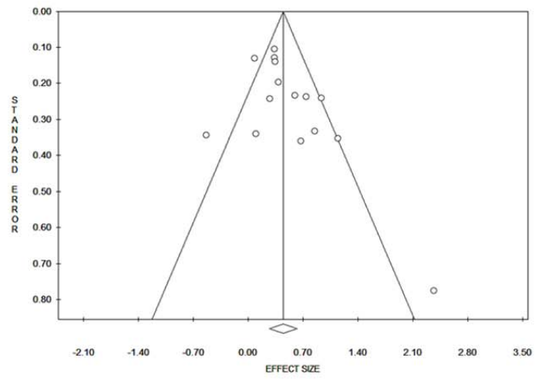
A. Hospitalization for Heart Failure.



B. Cardiac Mortality.



C. Death, Heart Failure and transplant.



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