

Supplementary file

Search strategies

PubMed search strategy

("Breast cancer"[Text Word] OR "Breast neoplasms"[MeSH Terms] OR ("Non-Hodgkin Lymphoma"[Text Word] OR "lymphoma, non hodgkin"[MeSH Terms])) AND ("Anthracycline therapy"[Text Word] OR "Chemotherapy"[Text Word] OR "Antineoplastic agents"[MeSH Terms] OR "Doxorubicin"[Text Word] OR "Adriamycin"[Text Word] OR "Doxil"[Text Word] OR "Daunorubicin"[Text Word] OR "Cerubidine"[Text Word]) AND ("Beta-Blockers"[Text Word] OR "adrenergic beta antagonists"[MeSH Terms] OR "Selective beta-blocker"[Text Word] OR "Nonselective beta-blocker"[Text Word] OR ("Carvedilol"[Text Word] OR "Coreg"[Text Word]) OR ("Metoprolol"[Text Word] OR "Lopressor"[Text Word] OR "toprol xl"[Text Word]) OR ("Atenolol"[Text Word] OR "Tenormin"[Text Word]) OR ("Nebivolol"[Text Word] OR "Bystolic"[Text Word]) OR ("Acebutolol"[Text Word] OR "Sectral"[Text Word]) OR ("Carteolol"[Text Word] OR "Ocupress"[Text Word]) OR ("Labetalol"[Text Word] OR "Trandate"[Text Word]) OR ("Bisoprolol"[Text Word] OR "Cardicor"[Text Word]) OR ("Nadolol"[Text Word] OR "Corgard"[Text Word]) OR ("Propranolol"[Text Word] OR "Inderal"[Text Word]) OR ("Sotalol"[Text Word] OR "Betapace"[Text Word]))

Scopus search strategy:

(TITLE-ABS-KEY (breast AND cancer OR breast AND neoplasms OR non-hodgkin AND lymphoma) AND ALL (anthracycline OR chemotherapy OR antineoplastic AND agents OR doxorubicin OR adriamycin OR doxil OR daunorubicin OR cerubidine) AND ALL (beta AND blockers OR adrenergic AND beta-antagonists OR carvedilol OR coreg OR metoprolol OR lopressor OR toprol OR atenolol OR tenormin OR nebivolol OR bystolic OR acebutolol OR sectral OR carteolol OR ocupress OR labetalol OR trandate OR bisoprolol OR cardiacor OR nadolol OR corgard OR propranolol OR inderal OR sotalol OR betapace))

Web of Science search strategy:

Breast cancer OR Breast neoplasms OR Non-Hodgkin Lymphoma (Topic) and Anthracycline OR Chemotherapy OR Antineoplastic agents OR Doxorubicin OR Adriamycin OR Doxil OR Daunorubicin OR Cerubidine (Topic) and Beta Blockers OR Adrenergic Beta-Antagonists OR Carvedilol OR Coreg OR Metoprolol OR Lopressor OR Toprol OR Atenolol OR Tenormin OR Nebivolol OR Bystolic OR Acebutolol OR Sectral OR Carteolol OR Ocupress OR Labetalol OR Trandate OR Bisoprolol OR Cardicor OR Nadolol OR Corgard OR Propranolol OR Inderal OR Sotalol OR Betapace (Topic)

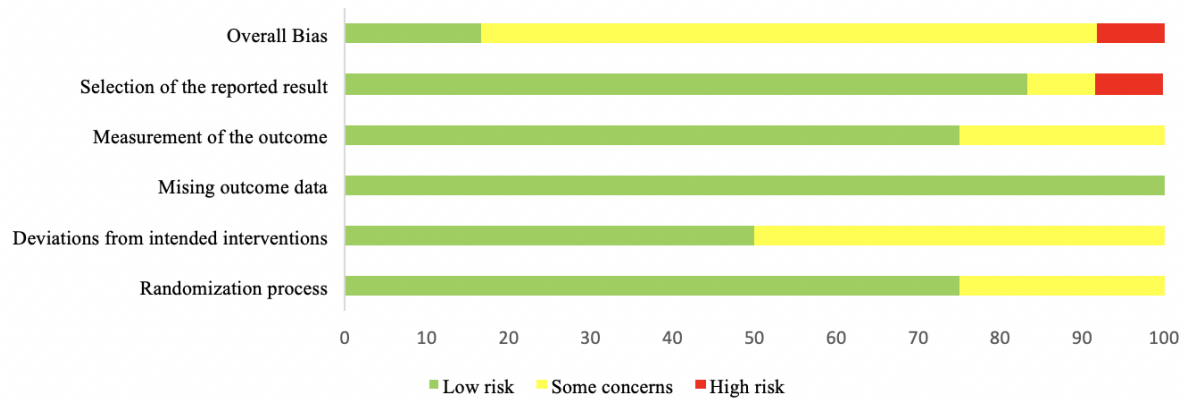
Embase search strategy:

(Breast cancer or Breast neoplasms or Non-Hodgkin Lymphoma).ab. and (Anthracycline or Chemotherapy or Antineoplastic agents or Doxorubicin or Adriamycin or Doxil or Daunorubicin or Cerubidine).af. and (Beta

Blockers or Adrenergic Beta-Antagonists or Carvedilol or Coreg or Metoprolol or Lopressor or Toprol or Atenolol or Tenormin or Nebivolol or Bystolic or Acebutolol or Sectral or Carteolol or Ocupress or Labetalol or Trandate or Bisoprolol or Cardicor or Nadolol or Corgard or Propranolol or Inderal or Sotalol or Betapace).af.

Supplementary Figure S1. Risk of bias of included RCTs. **A** – RoB per domain and overall across RCTs. **B** – RoB per domain and per RCT

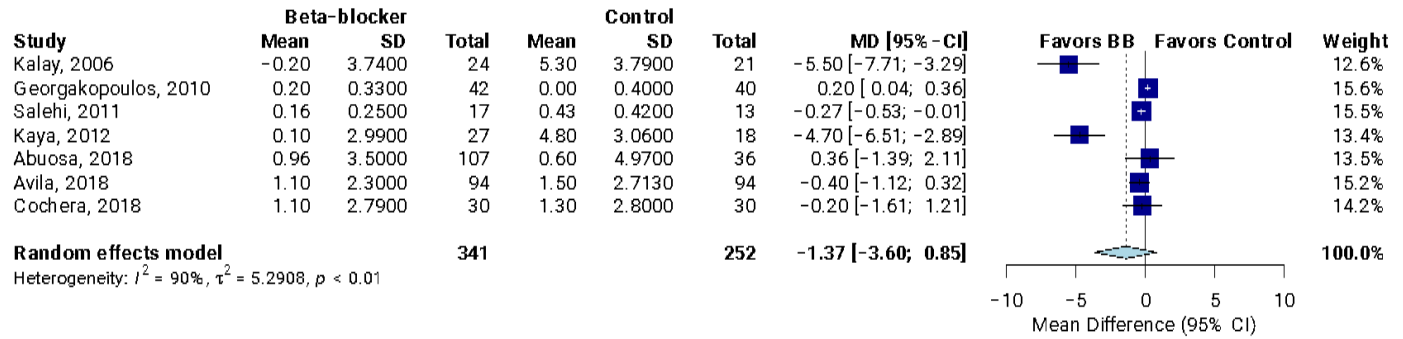
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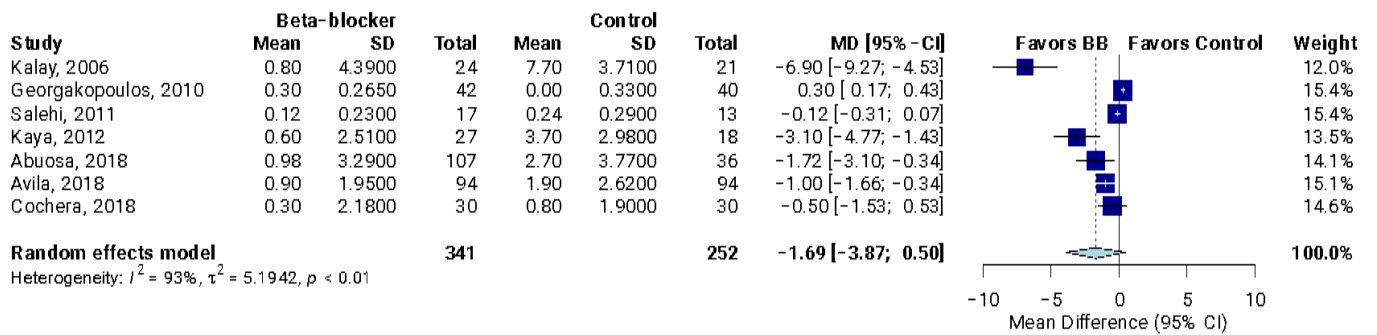
B

Unique ID	Study ID	Experimental	Comparator	Outcome	Weight	D1	D2	D3	D4	D5	Overall	
Abuosa 2018	Abuosa 2018	Carvedilol 25mg	Placebo	Change in LVEF baseline to 6 months	1	+	!	+	+	+	!	+
Avila 2018	CECCY	Oral Carvedilol	Placebo	Percentage of patients with a reduction in LVEF greater than or equal to 10% at 6 months and 2 years	1	+	+	+	+	+	+	+
Beheshti 2016	Besheshti 2016	Carvedilol 6.25mg	Placebo	The change of LVEF from baseline to 1 week	1	+	+	+	+	+	+	+
Cochera 2018	Cochera 2018	Oral Nebivolol 5 mg	Placebo	Change of LVEF from baseline to 18 weeks	1	+	!	+	!	+	!	!
Georgakopoulos 2010	Georgakopoulos 2010	Enalapril and Metoprolol	Placebo	Total cardiotoxicity cases up to 30 months	1	!	+	+	+	!	!	D1
Gulati 2016	PRADA	Metoprolol	Candasartan	Change of BNP levels from baseline to 23 months	1	!	+	+	+	+	!	D2
Kalay 2006	Kalay 2006	Carvedilol 12.5 mg	Placebo	Systolic function	1	!	!	+	+	+	!	D3
Kaya 2012	Kaya 2012	Nebivolol	Placebo	Help prevent early onset anthracycline induced cardiotoxicity defined as change in LVEF	1	+	!	+	+	+	!	D4
Lee 2021	SAVE HEART	Carvedilol	Candasartan	The incidence of early DISC within 6 months of CT and late DISC at least 12 months after CT	1	+	!	+	+	+	!	D5
Livi 2021	SAFE	Bisoprolol 5 mg	Placebo	Prevent >10% decrease in LVEF after 24 months	1	+	+	+	!	+	!	
Nabati 2017	Nabati 2017	Carvedilol 3.125 to 6.12	Placebo	Change in LVEF before ECHO and 6 months after randomization	1	+	+	+	+	+	!	
Salehi 2011	Salehi	Carvedilol 12.5/25mg	Placebo	Preventing the effects of cardiomyopathy over the course of 4 months	1	+	!	+	!	-	-	

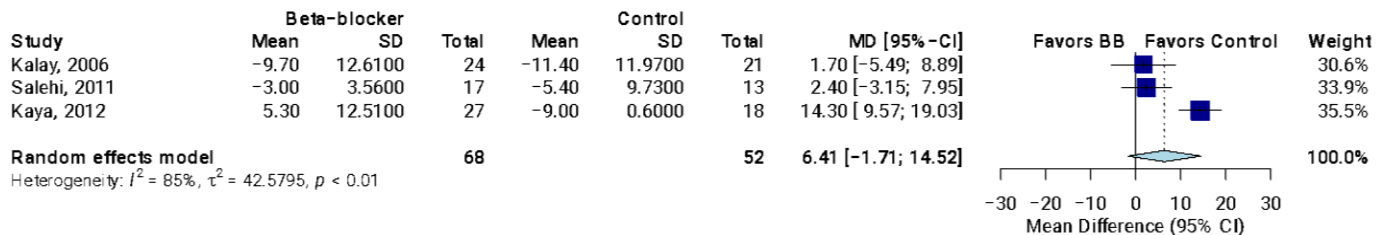
Supplementary Figure S2. Effects of β -blockers on change of LVEDD at follow-up (mm)



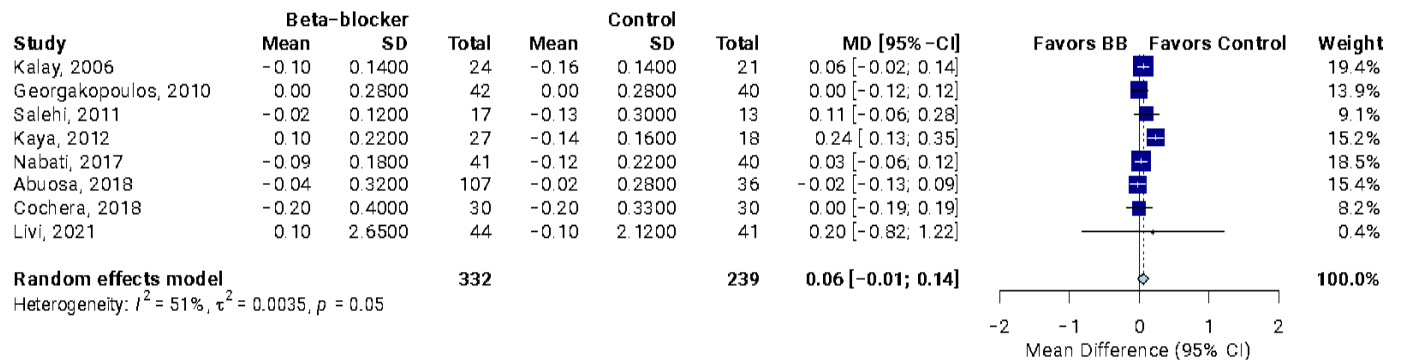
Supplementary Figure S3. Effects of β -blockers on change of LVESD at follow-up (mm)



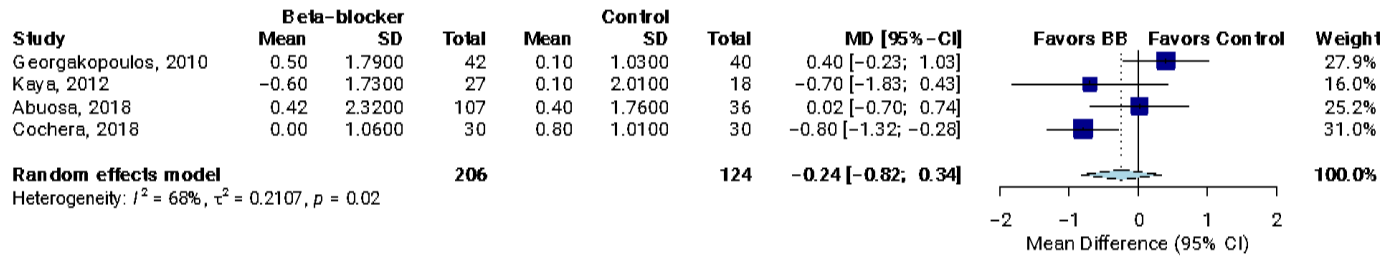
Supplementary Figure S4. Effects of β -blockers on change of peak E' velocity at follow-up



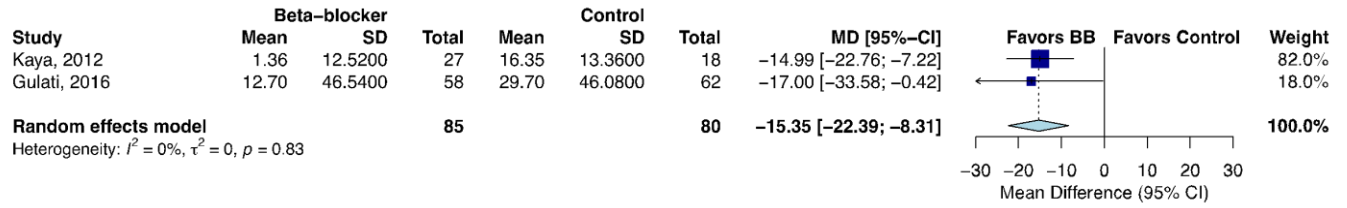
Supplementary Figure S5. Effects of β -blockers on change of E/A ratio at follow-up



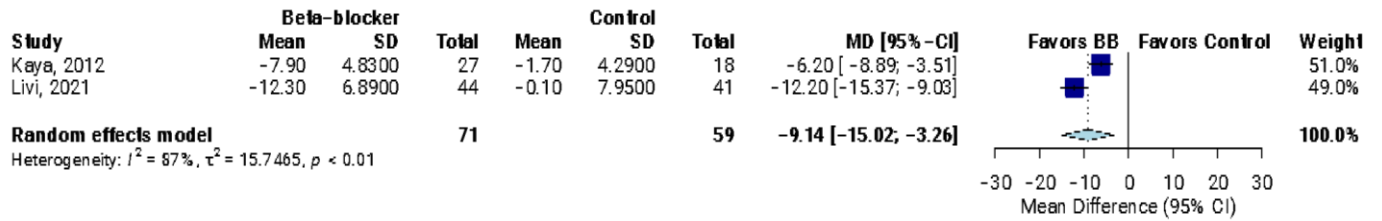
Supplementary Figure S6. Effects of β -blocker on change of E/e' ratio at follow-up



Supplementary Figure S7. Effects of β -blockers on change of NT-proBNP at follow-up (pg/ml)

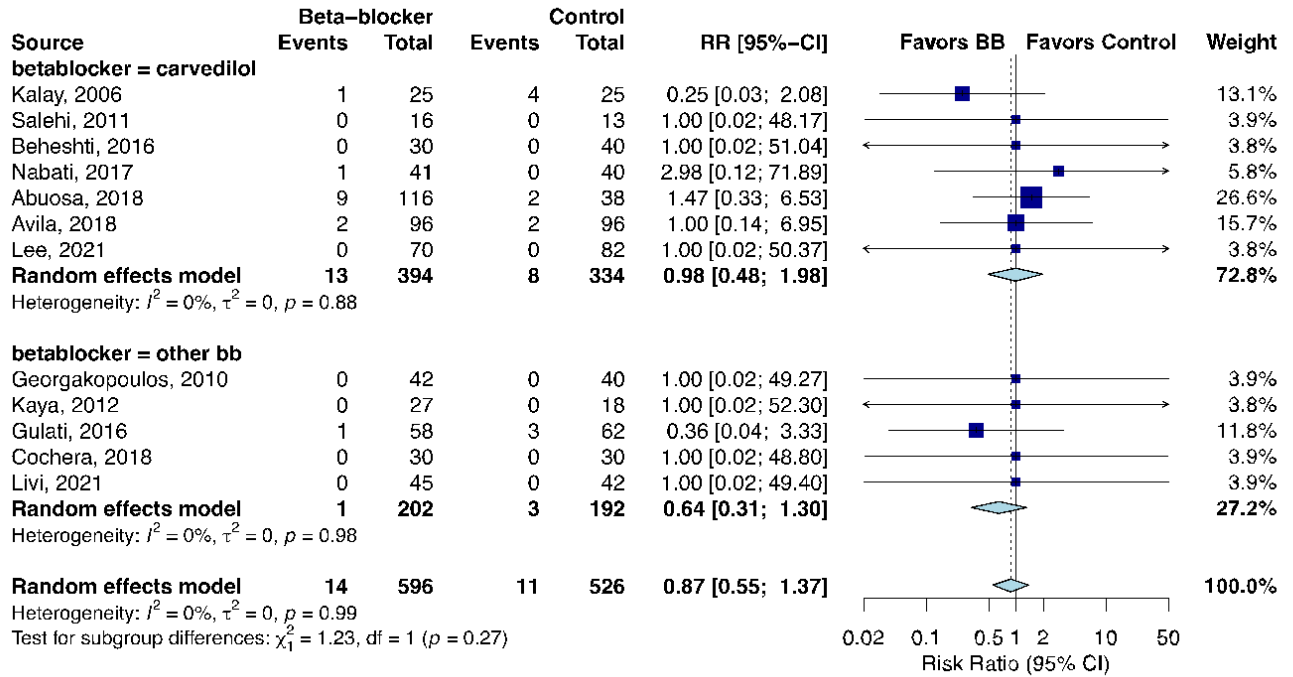


Supplementary Figure S8. Effects of beta-blockers on change of heart rate at follow-up (bpm)

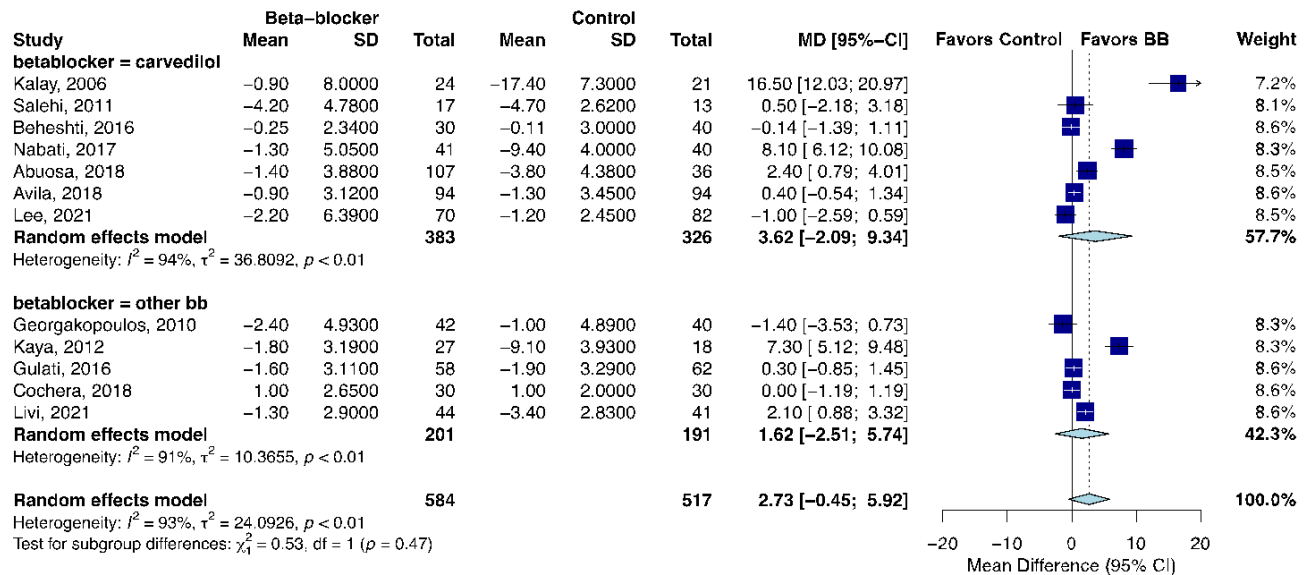


Supplementary Figure S9. Subgroup analyses by type of β -blocker. **A** – All-cause mortality at follow-up. **B** – Change of LVEF at follow-up (%). **C** – Change of LVEDD at follow-up (mm). **D** – Change of LVESD at follow-up (mm). **E** – Change of peak E' velocity at follow-up (cm/s). **F** – Change of E/A ratio at follow-up. **G** – Change of E/e' ratio at follow-up.

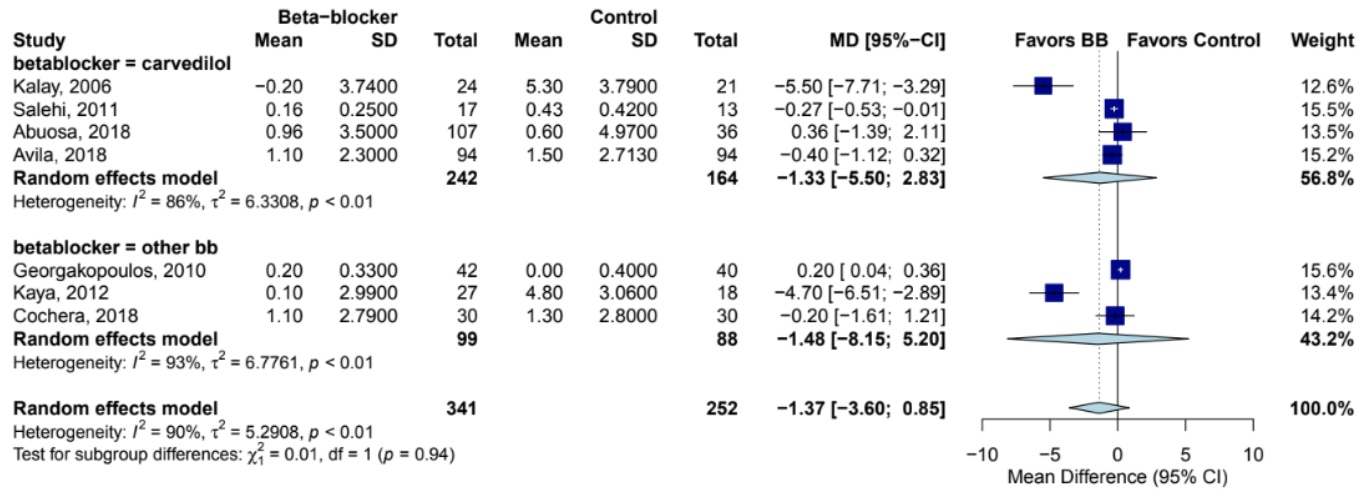
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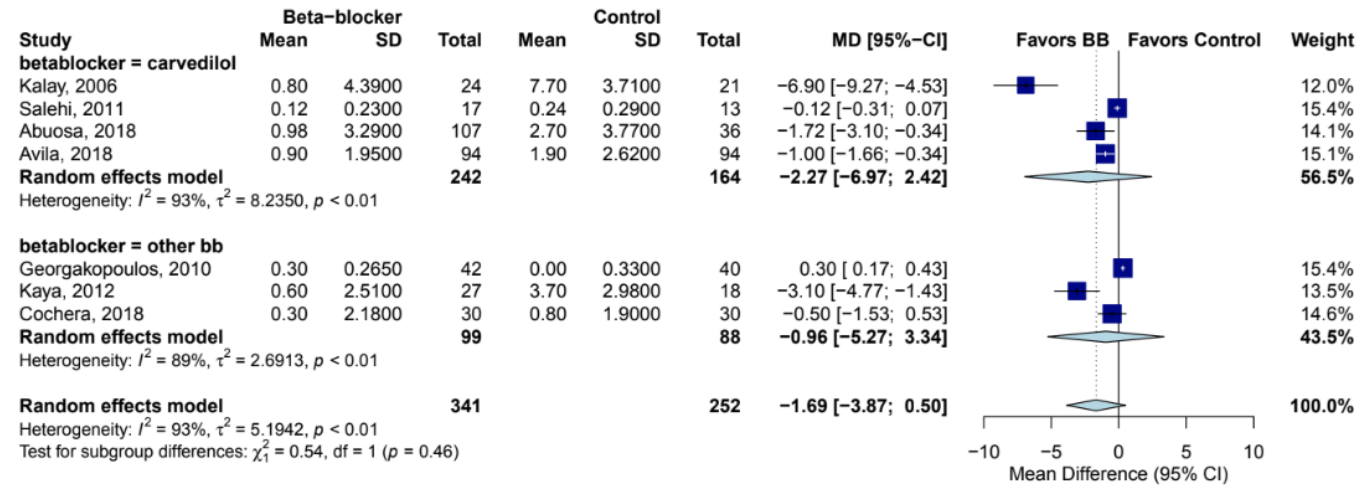
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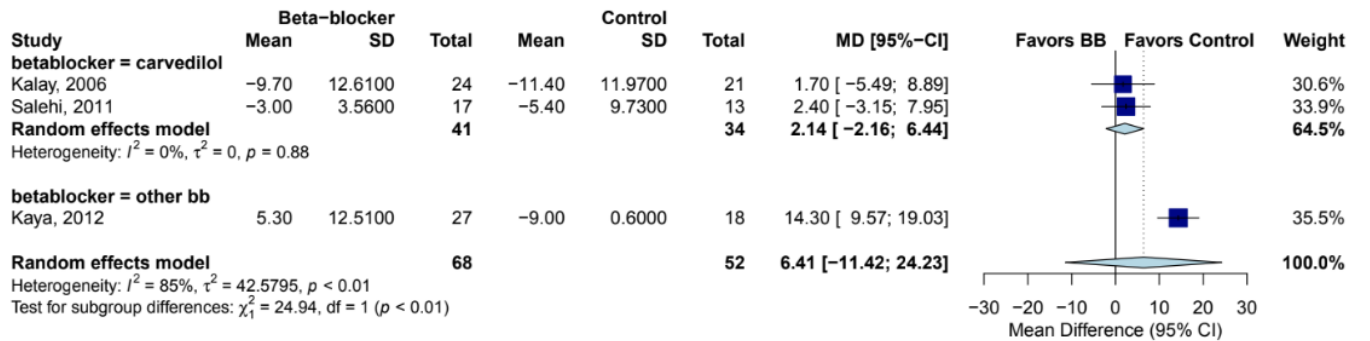
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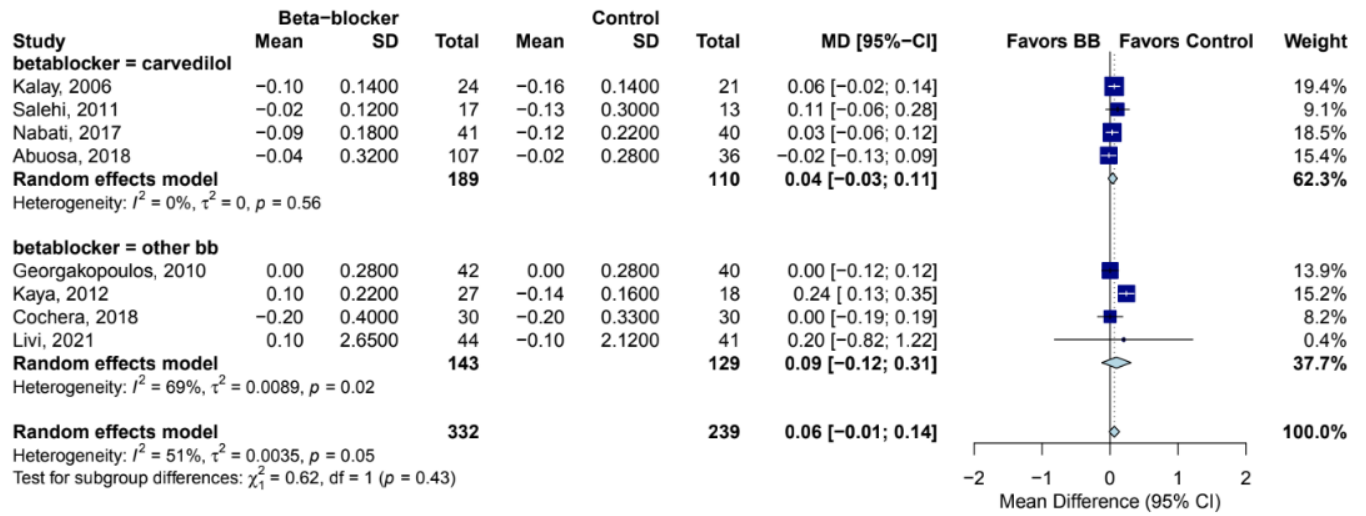
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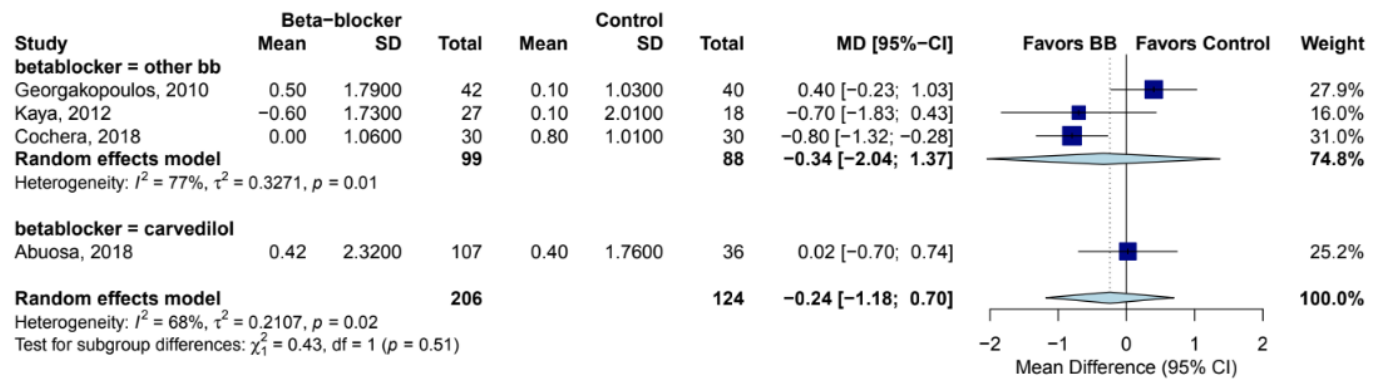
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F

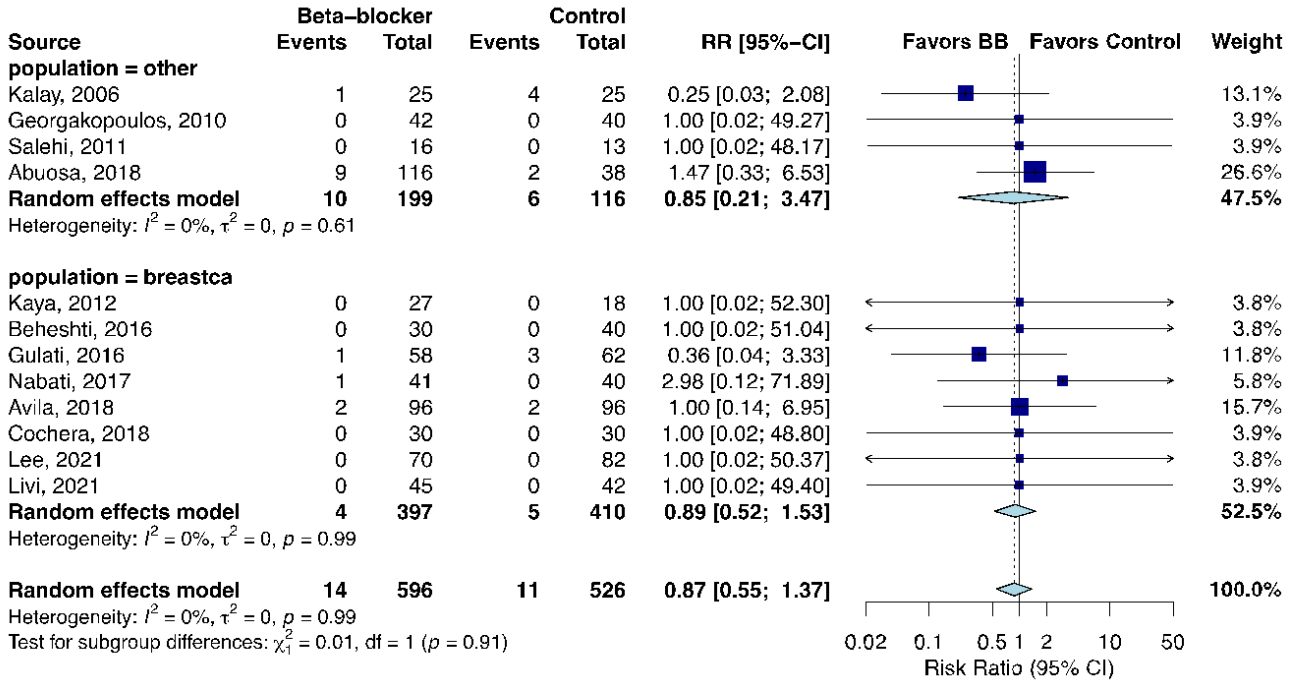


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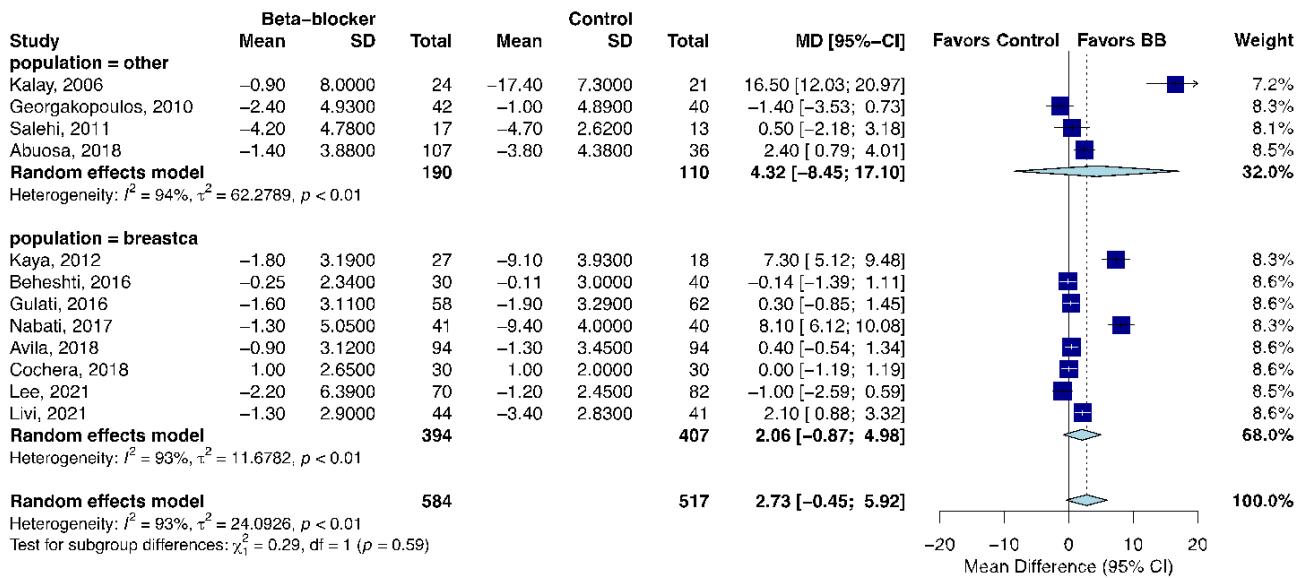


Supplementary Figure S10. Subgroup analysis by patient population. **A** – All-cause mortality at follow-up. **B** – Change of LVEF at follow-up (%). **C** – Change of LVEDD at follow-up (mm). **D** – Change of LVESD at follow-up (mm). **E** – Change of peak E' velocity at follow-up (cm/s). **F** – Change of E/A ratio at follow-up. **G** – Change of E/e' ratio at follow-up.

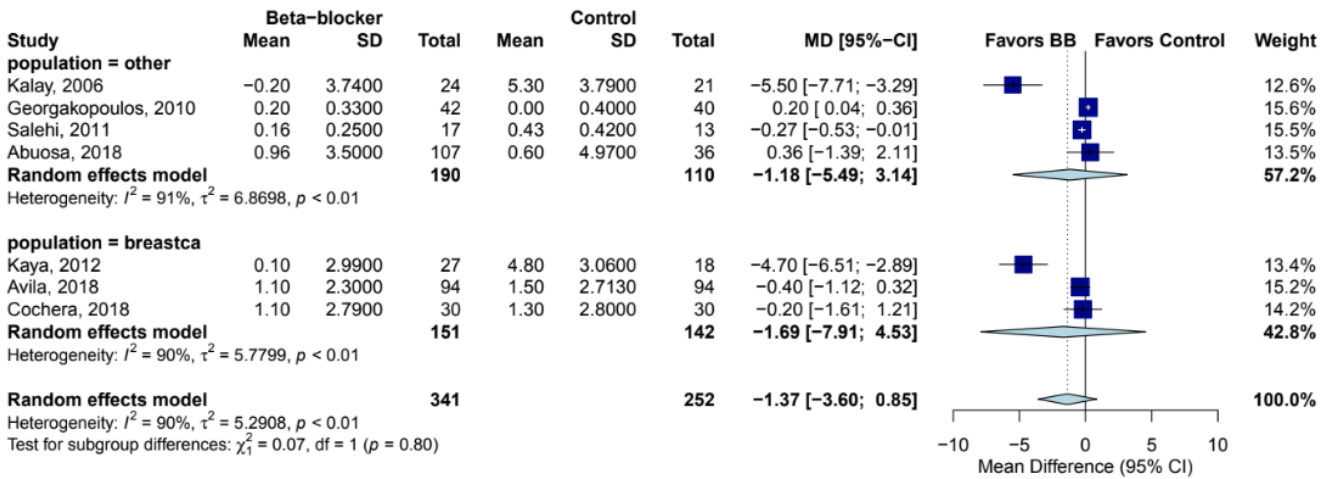
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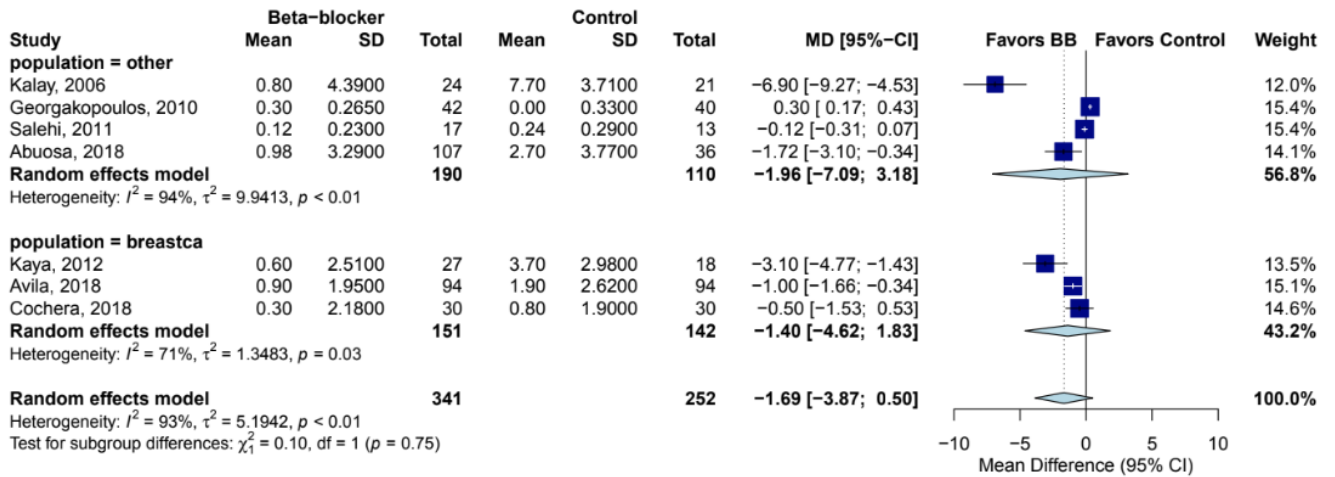
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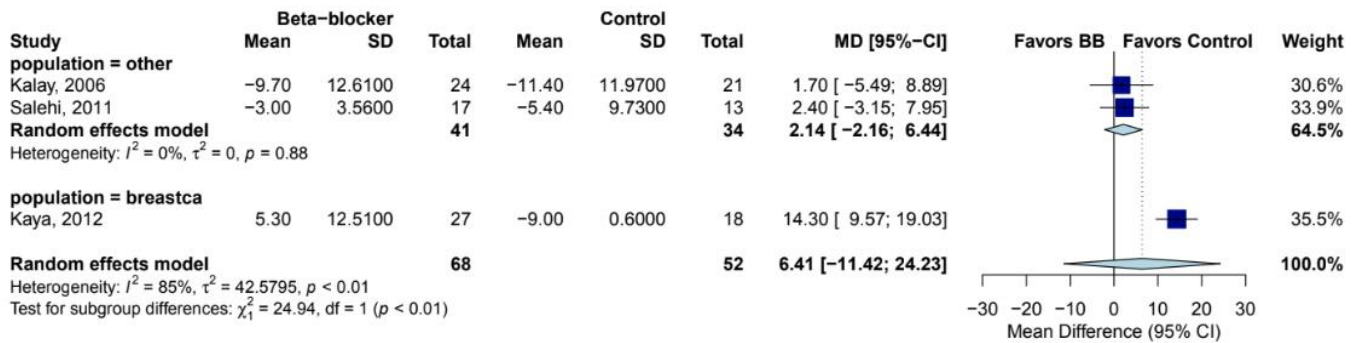
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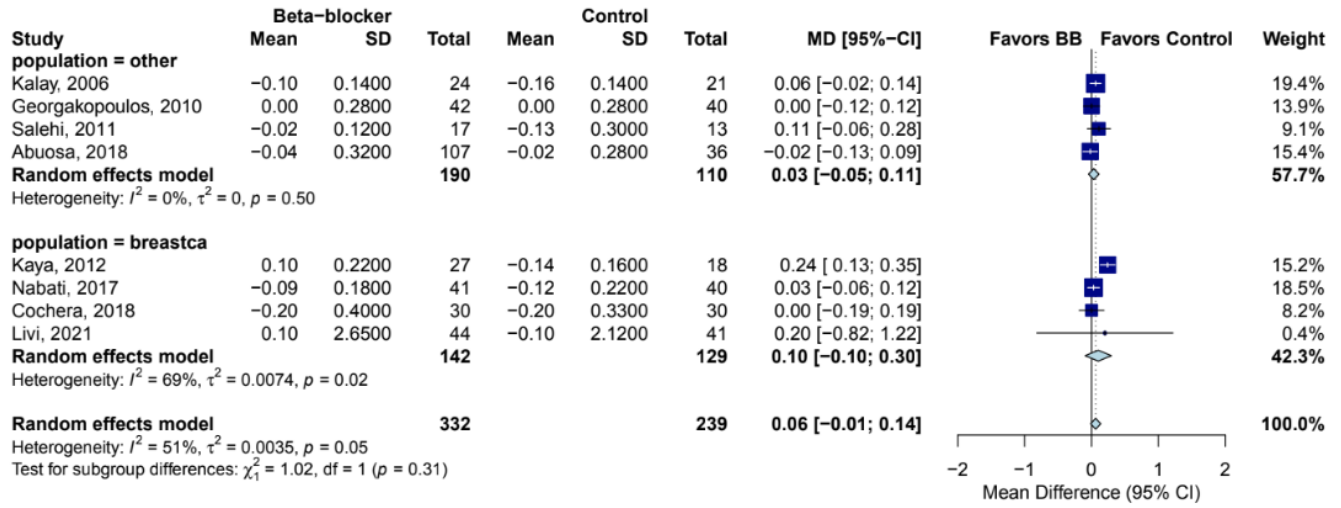
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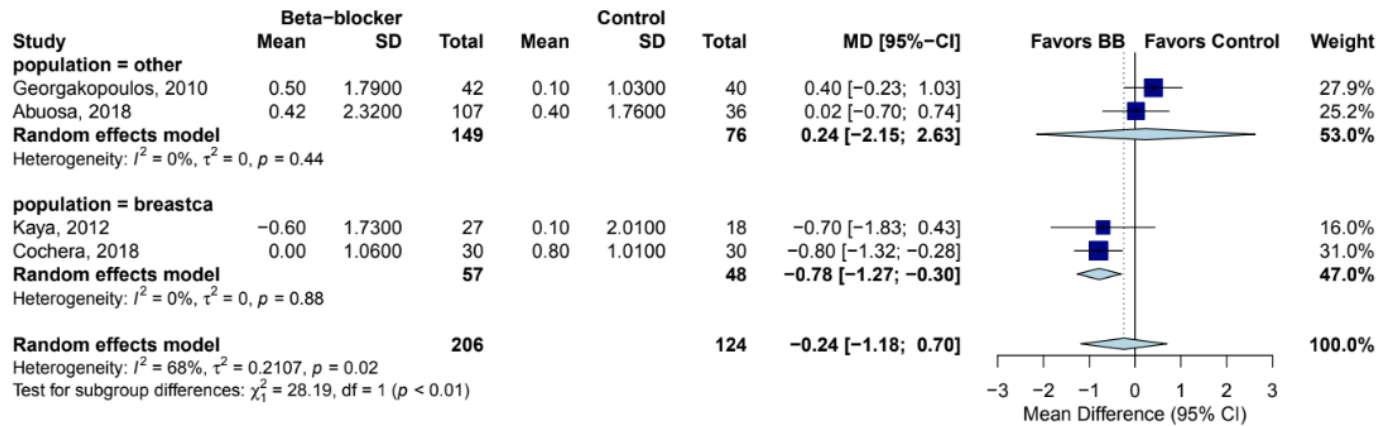
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F

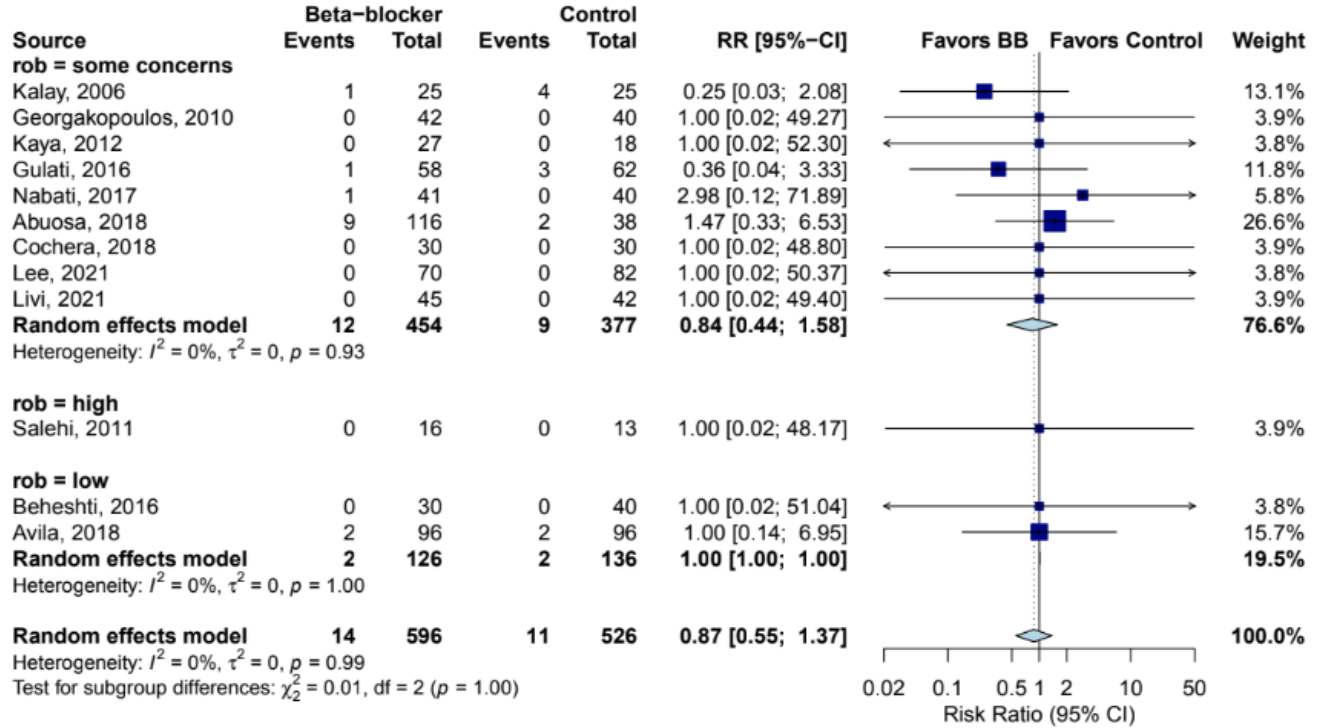


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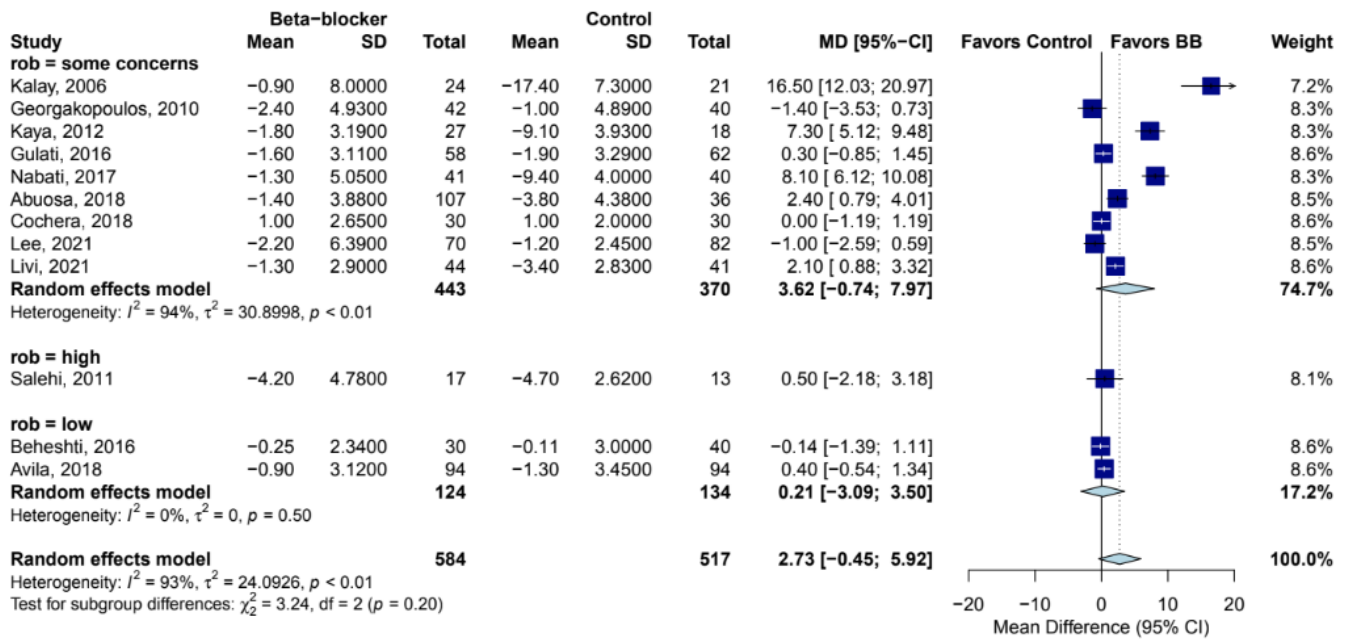


Supplementary Figure S11. Subgroup analyses by risk of bias. **A** – All-cause mortality at follow-up. **B** – Change of LVEF at follow-up (%). **C** – Change of LVEDD at follow-up (mm). **D** – Change of LVESD at follow-up (mm). **E** – Change of peak E' velocity at follow-up (cm/s). **F** – Change of E/A ratio at follow-up

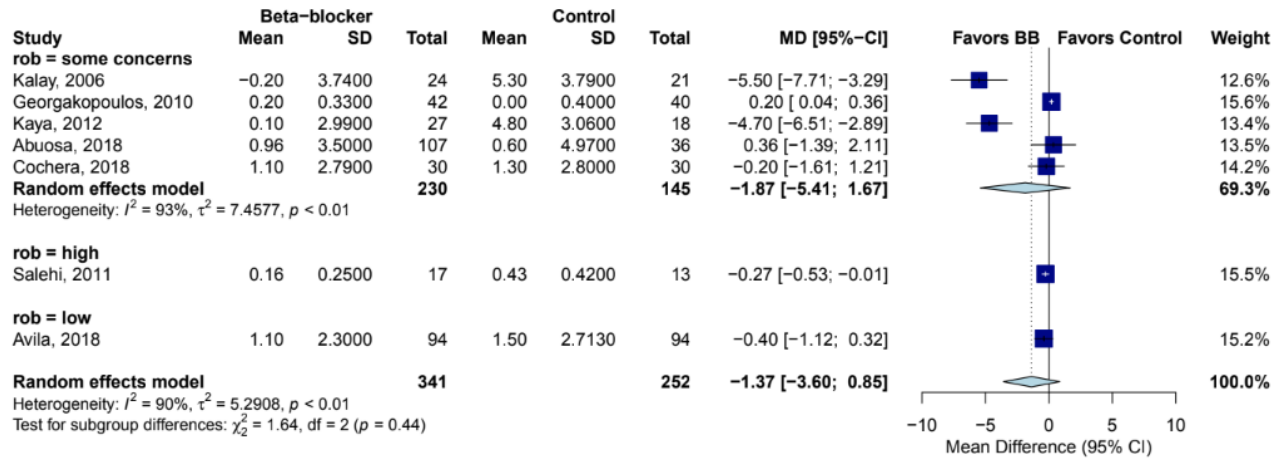
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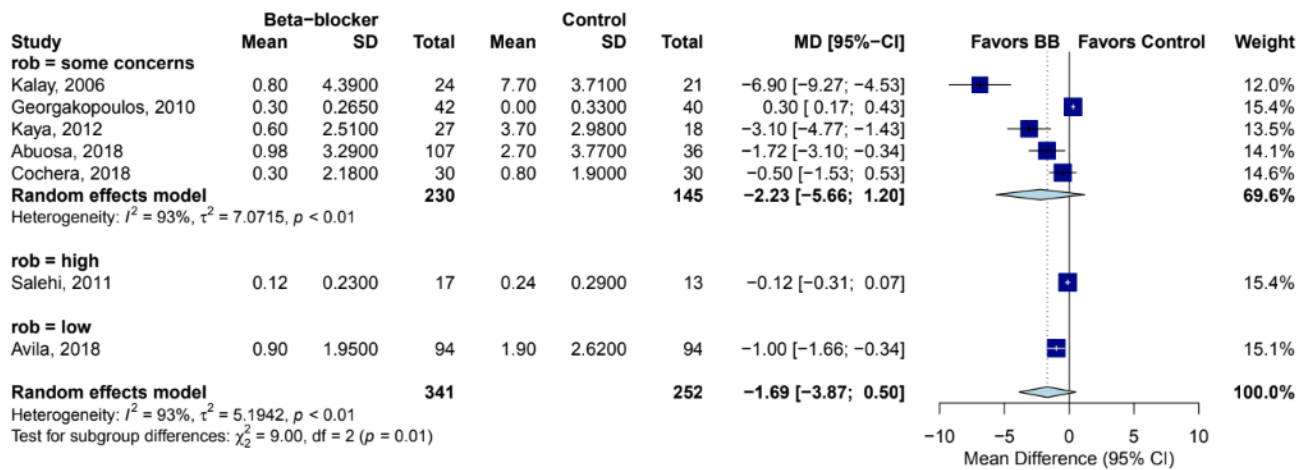
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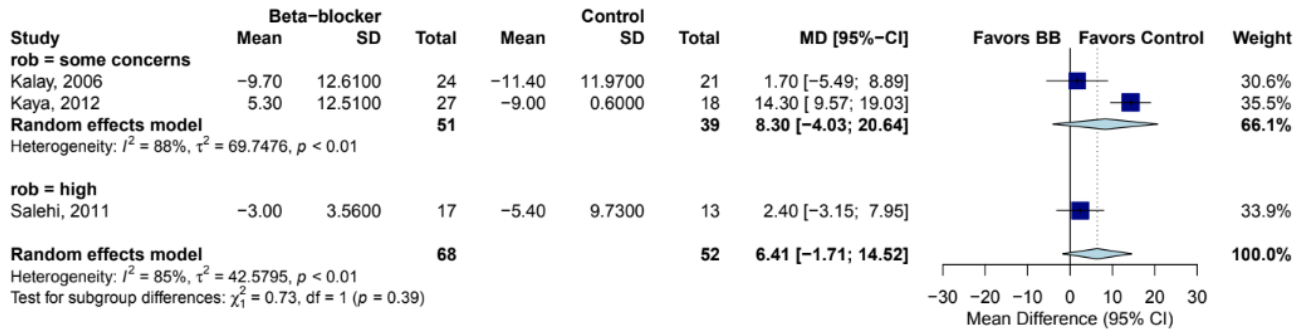
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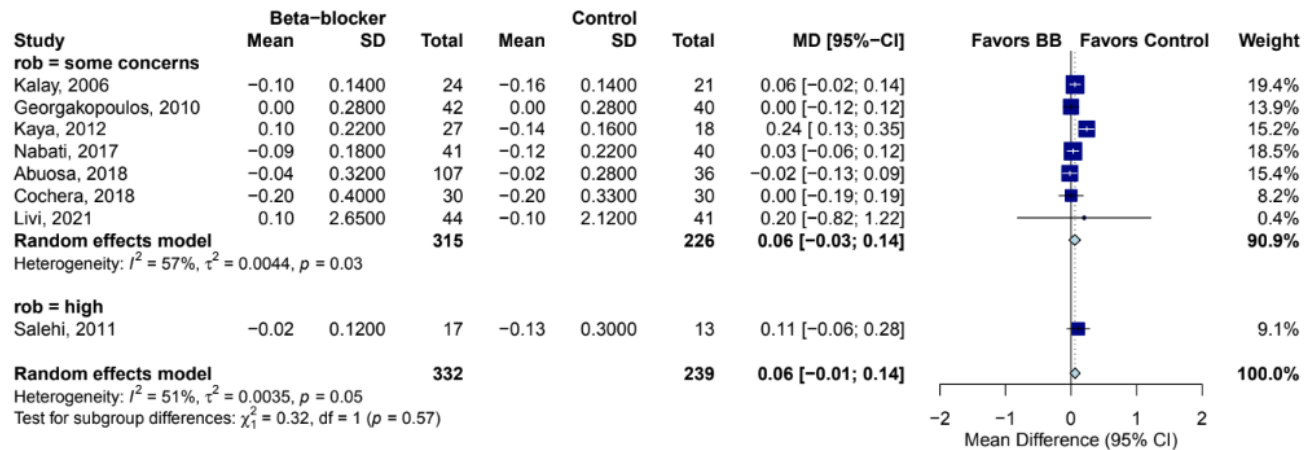
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E

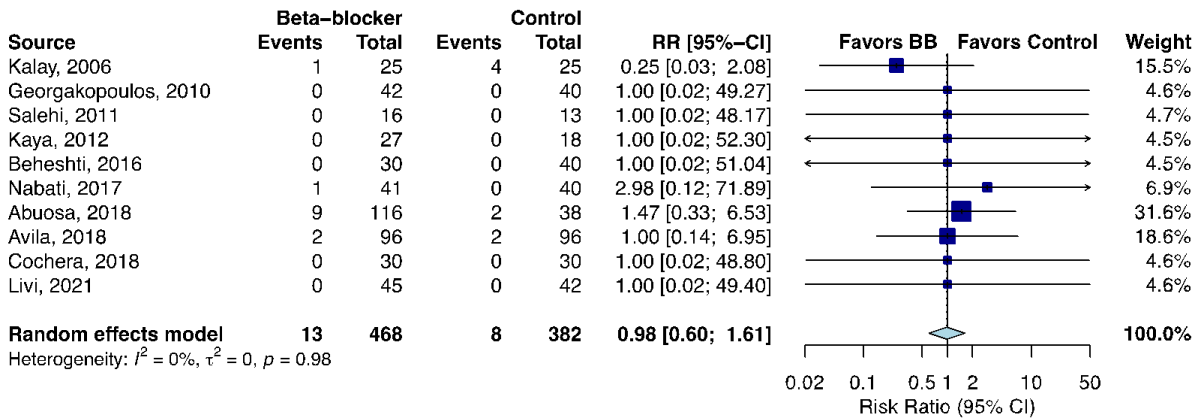


F



Supplementary Figure S12. Sensitivity analyses excluding studies without placebo as comparator. **A** – All-cause mortality at follow-up. **B** – Change of LVEF at follow-up (%).

A



B

