

Pharmacist Care in the Management of Hypertension in Diabetes: A Systematic Review and Meta-Analyses of Randomized Controlled Trials

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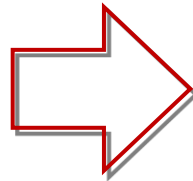
Presentation plan

- From the context to the research question
 - Hypertension care
 - Role and impact of pharmacist care in hypertension care?
- Systematic review with meta-analysis in Diabetes Care
 - Methods
 - Results
- Conclusions & perspectives

Context

Hypertension care

- HTA control suboptimal
 - 40% of patients with diabetes achieved the recommended target level (BP<130/80 mmHg) in the NHANES survey
- Ageing population
- Limitation to access to primary care MD and workload of primary care



- Recommendation of team-based care to improve control of hypertension (US Community Preventive Services Task Force 2012)
- Integration of pharmacist and nurse as provider of health services and member of the healthcare team

Pharmacist

Role

- Healthcare professional
 - highly accessible
 - regular contact with patient
 - access to electronic patient medication history
 - complementary skills to those of MD and nurse

Pharmacist is well positioned – in collaboration with MD and nurse – to intervene and improve hypertension care among patients with diabetes

Pharmacist

Impact

- Studies demonstrated beneficial pharmacist interventions - alone or in collaboration with MD - in the management
 - hypertension (Carter et al. 2009, Santschi et al. 2008)
 - dyslipidemia (Tsuyuki et al. 2002, Villeneuve et al. 2010)
 - diabetes (Choe et al. Am J Manag Care 2005)

To more effectively use the pharmacist expertise in CVD care, a systematic review of pharmacist interventions and impact on patient care is necessary

Systematic review with meta-analysis

Research question

- Do pharmacist interventions - alone or in collaboration with other healthcare professionals - improve the management
 - hypertension
 - dyslipidemia
 - smoking
 - obesity
- among outpatients with diabetes?

Pharmacist Interventions to Improve Cardiovascular Disease Risk Factors in Diabetes

A systematic review and meta-analysis of randomized controlled trials

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Systematic review with meta-analysis

Methods

○ Criteria inclusion

- Studies with RCTs design
- Evaluated effect of pharmacist care (delivered by community or clinical pharmacist) - alone or in collaboration with other healthcare professionals
- Among adult outpatients with diabetes (type 1 or 2) and with any modifiable CVD risk factors (hypertension, dyslipidemia, smoking or obesity)
- Compared with usual care group

○ Outcomes

- Changes in BP, cholesterol (total, LDL, HDL), BMI and proportion of smokers

Systematic review with meta-analysis

Methods

- Systematic literature search
 - Databases: MEDLINE, EMBASE, CINAHL and CENTRAL
 - Search strategy: MESH terms included CVD-related terms and pharmacist-related terms
- Selection study, data extraction and classification of pharmacist interventions independently performed by V.S. and A.C. using a priori-defined categories
 - Pharmacist directed-care
 - Pharmacist collaborative care (Koshman et al. Arch Intern Med 2008)
- Statistical analyses
 - Effect estimates reported as weighted mean differences with 95% CI using a random-effects model

Flow chart

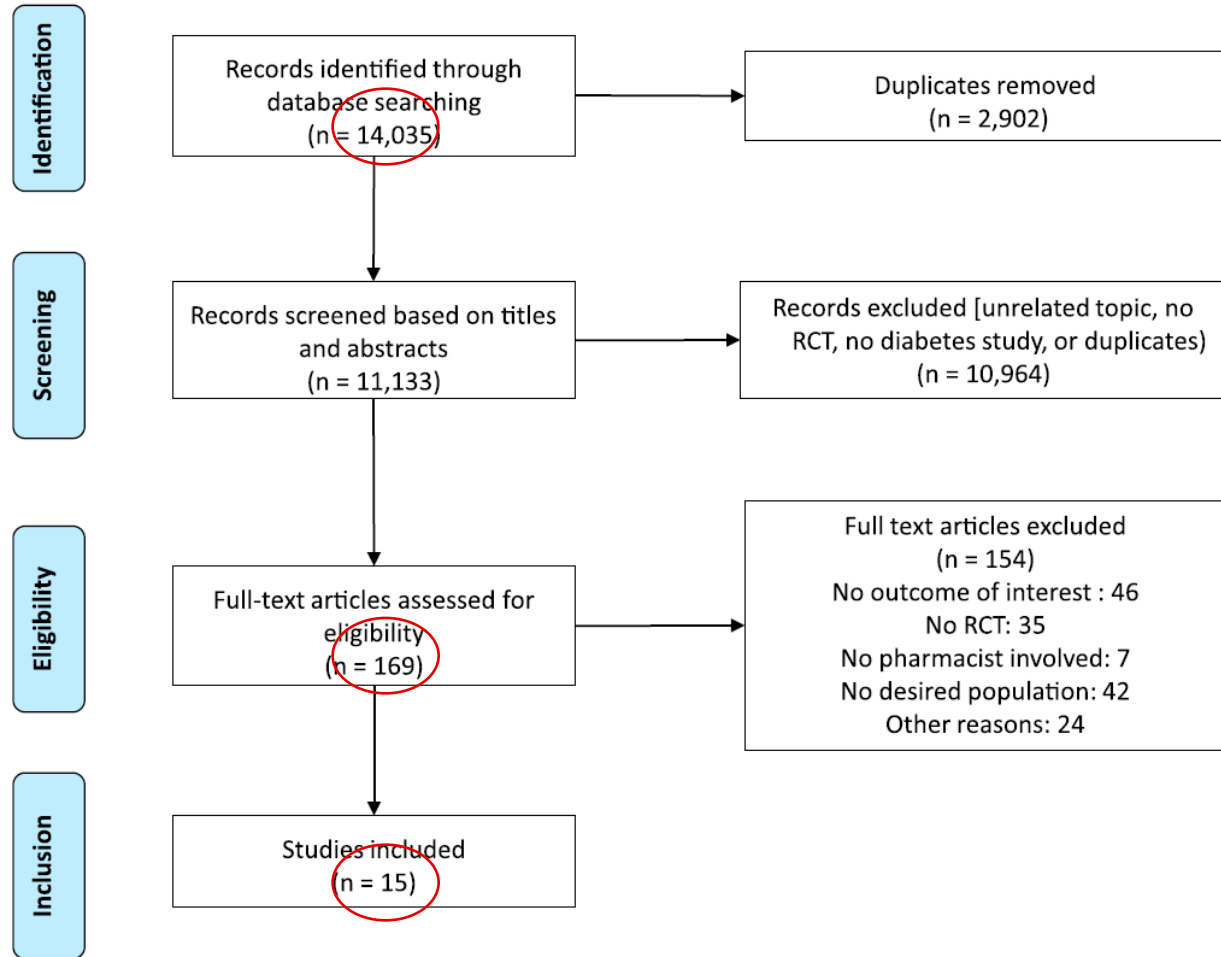


Figure 1—Selection of studies for systematic review of pharmacist care interventions. (A high-quality color representation of this figure is available in the online issue.)

Santschi et al. *Diabetes Care* 2012

Description of included studies

- 1) Study author, year of the publication and country
- 2) Study setting and design, duration of follow-up and sample size
- 3) Study participants (CVD risk factors, medications, age)
- 4) Key components of pharmacist interventions (description, frequency of intervention)
- 5) Description of the usual care
- 6) Outcomes

- Studies (N=15)
 - Countries
 - **U.S and Canada (N=9)**
 - Asia (Thailand, China, India) (N=5)
 - Europe (N=1) and Australia (N=1)
 - Setting
 - **Outpatient clinic (family medicine clinic, Veterans Affairs) (N=12)**
 - Community pharmacies (N=3)
- Participants
 - **9 111** participants with a mean age of 63y (range 49-70)
 - followed over a mean of **11 mo** (range 4-24) with controlled or uncontrolled CVD risk factors, with or without treatment
- Pharmacist interventions
 - Pharmacist-directed care (N=8)
 - Pharmacist **collaborative care (N=7)**

Results

Pharmacist interventions - Summary

Types of pharmacist interventions	% of studies where intervention was conducted
<ul style="list-style-type: none"> → ○ Patient education <ul style="list-style-type: none"> ○ drug adherence, lifestyle, physical activity (by distribution of educational material or workshop) 	93
<ul style="list-style-type: none"> → ○ Medication management <ul style="list-style-type: none"> ○ medication review from patient interview or medical record ○ assessment of drug adherence (pill count) ○ monitoring of drug (assessment, adjustment or change of drug) 	93
<ul style="list-style-type: none"> → ○ Feed-back to MD <ul style="list-style-type: none"> ○ recommendations to MD – oral or written – on drug changes (initiation or increase) and problems of drug adherence ○ development of treatment plan in collaboration with MD 	80
<ul style="list-style-type: none"> ○ Patient-reminder systems <ul style="list-style-type: none"> ○ telephone contact, drug adherence aids (color stickers for pillboxes) 	33
<ul style="list-style-type: none"> ○ Measurement of BP, height or weight 	20

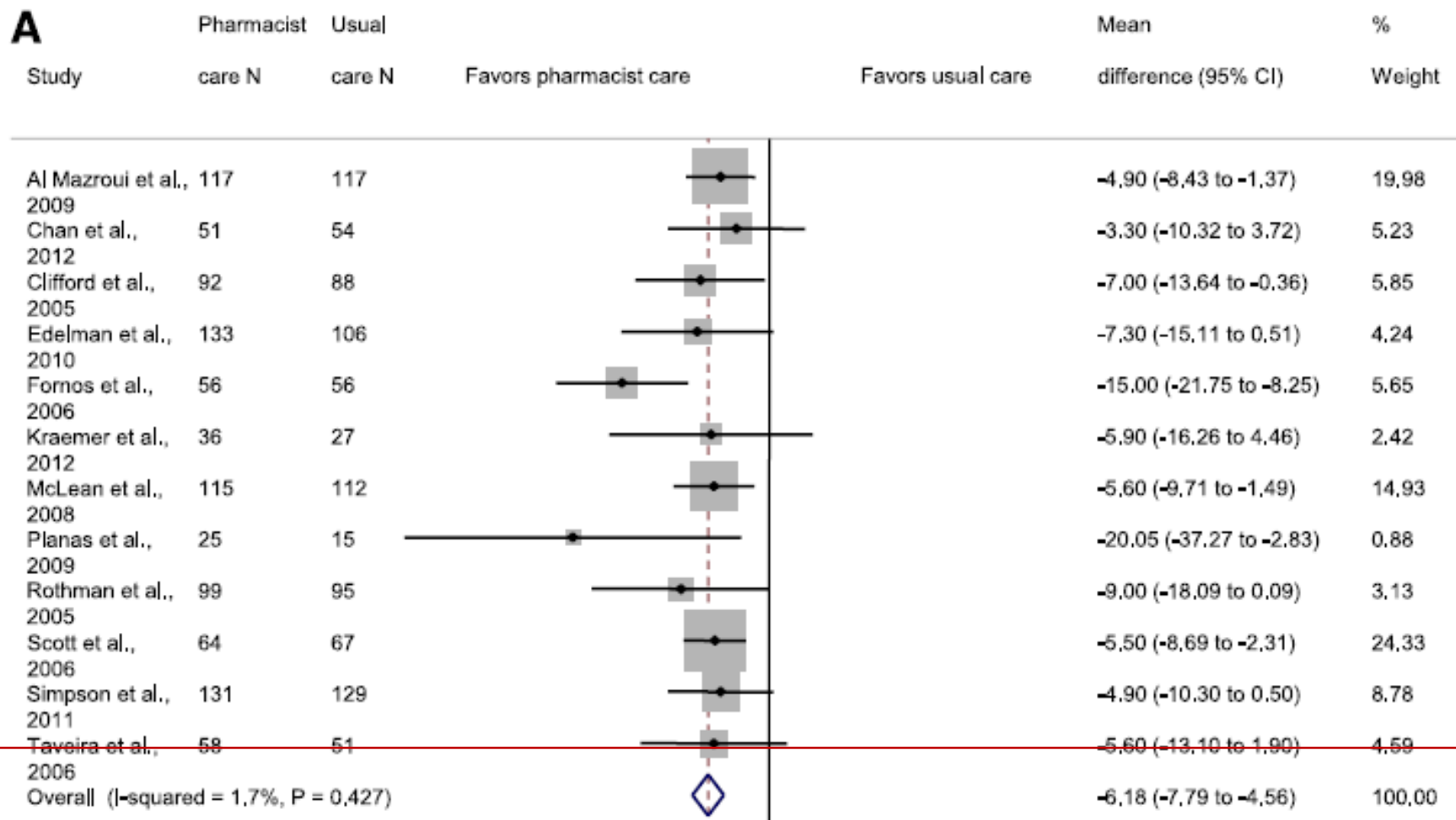
Results

Pharmacist interventions – Summary on effect

CVD risk factors	Number of studies (N=15)	Number of participants (N=9 111)	Weighted mean difference (IC 95%)
Systolic BP [mmHg]	12	1 894	-6.2 (-7.8 to -4.6)
Diastolic BP [mmHg]	9	1 496	-4.5 (-6.2 to -2.8)
Total cholesterol [mmol/L]	8	1 280	-0.6 (-0.6 to -0.2)
LDL cholesterol [mmol/L]	9	8 084	-0.3 (-0.4 to -0.2)
HDL cholesterol [mmol/L]	6	826	0.01 (-0.05 to 0.06)
BMI [kg/m ²]	5	751	-0.9 (-1.7 to -0.1)
Smoking	0	0	-

Results

Pharmacist interventions – Effect on SBP



NOTE: Weights are from random-effects analysis

-30 -20 -10 0 10 [mmHg]

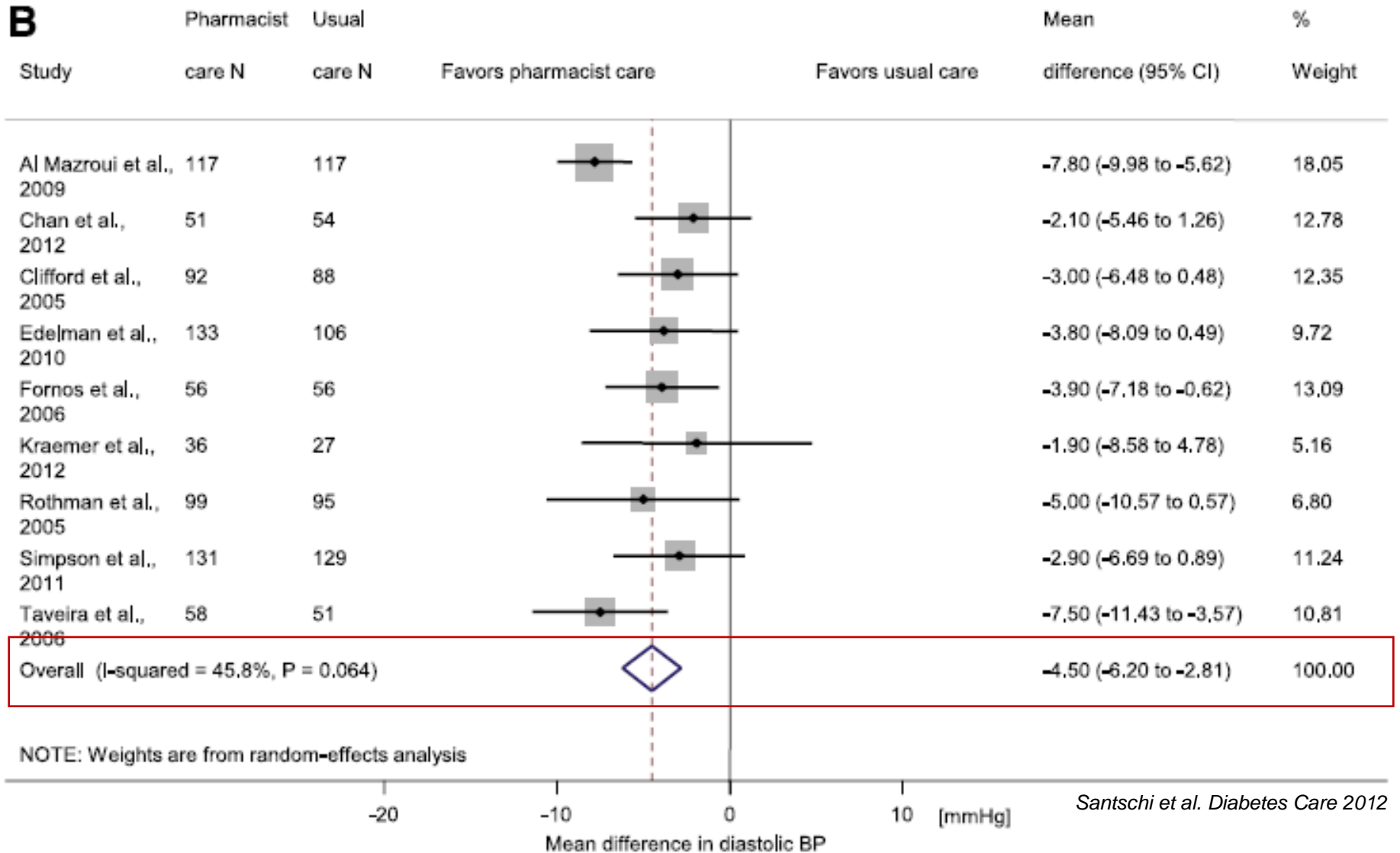
Mean difference in systolic BP

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SP
anne

Results

Pharmacist interventions – Effect on DBP



Results

Limitations

- No literature search for unindexed and unpublished literature
- No consensus on the definition of intervention
- Moderate heterogeneity observed
 - Differences in interventions and settings
 - Differences in characteristics of patients
- Most studies conducted in U.S and Canada reflecting an advanced role of the pharmacist in healthcare system

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Conclusions & perspectives

- Pharmacist – alone or in collaboration with MD, nurse, dietitian – improve hypertension management among patients with diabetes
- Integration of pharmacist in the hypertension care is pertinent for improving management of hypertension
- Further studies are needed to identify
 - which type of pharmacist intervention are more effective, less-time consuming and implementable in the healthcare system in Switzerland

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Thank you for your attention

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