

# Cardiovascular medication use and health-related Quality of Life in older women with diabetes

Candidate: Nur Hafidha Hikmayani

Degree: Master of Clinical Epidemiology

University: School of Medicine and Public Health, University of Newcastle

Supervisors: Dr Jane Robertson (School of Medicine and Public Health, University of Newcastle) & Ms Xenia Dolja-Gore (Research Centre for Gender, Health and Ageing, University of Newcastle)

**Background.** Diabetes patients are at high risk for cardiovascular disease. Evidence and guidelines recommending the use of multiple cardiovascular medications to support the management of diabetes have been well-established. It is nevertheless of growing concern that the benefits conferred by combination of the drugs are potentially offset by perceived deterioration on health-related quality of life (HRQoL) attributable to pill burden.

**Objectives.** A cross-sectional study was conducted to determine the extent of use of cardiovascular medications in elderly Australian women with diabetes—either individually or in combination—for primary and secondary prevention of cardiovascular disease. This study further examined whether usage patterns of cardiovascular medications have effects on their health-related quality of life.

**Methods.** A subset of the older cohort completing Survey 4 in the ALSWH who self-reported to have been diagnosed with diabetes and/or use medications indicative of diabetes were selected as study subjects. Use of cardiovascular medications was identified from self-reports on usage of medications belonging to the Anatomical Therapeutic Chemical (ATC) code B01AC (platelet aggregation inhibitors), C03 (diuretics), C07 (β-blockers), C08 (calcium channel blockers), C09 (agents acting on the renin-angiotensin system), C02 (other antihypertensives) and C10 (lipid modifying agents). Prevention stage of cardiovascular disease

was determined by presence of macrovascular disease identified from self-reports of having at least one of the following conditions: stroke, heart disease (angina, heart attack, other heart problems), had undergone or on waiting list for a heart surgery (heart bypass, angioplasty, angiography), or on any of cardiac drugs (ATC code C01) or warfarin (ATC code B01AA). Patterns of cardiovascular drug use were classified as no use, using any antihypertensives, lipid lowering agents or antiplatelet drugs, using any two combinations, and using all the three classes of medications. Quality of life was measured with the use of the SF-36, focusing on the physical functioning, general health, vitality and mental health subscales. Linear regression analyses of survey data evaluated the associations between usage patterns of cardiovascular medication and individual subscales of the SF-36 while controlling for other sociodemographic, health behaviour and health service utilisation characteristics.

**Results.** Of 7,158 older women retained at Survey 4, 885 were identified as having diabetes among which 390 (46.8%) had macrovascular disease. Twenty-three percent of the diabetic women used any one category of antihypertensives, lipid lowering drugs or antiplatelets, 37.5% reported use of a combination of any two and 29.1% were on all three categories of medicines. Using at least one cardiovascular drug was shown to be associated with higher HRQoL scores. After adjustment for other covariates, being

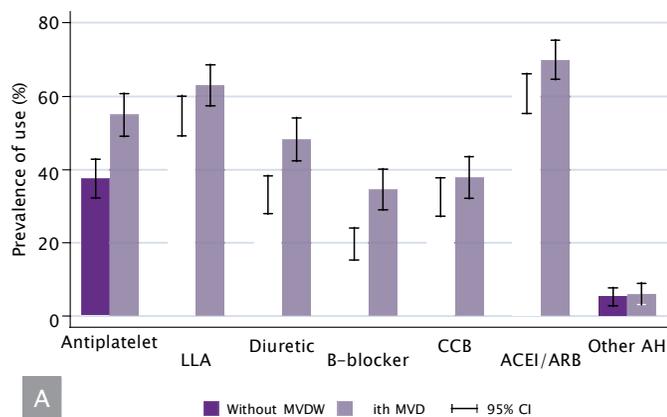


Figure 1. Cardiovascular medication use by presence of macrovascular disease. Panel A shows usage prevalences of antiplatelet, lipid lowering drug and antihypertensive classes. Panel B shows the overall pattern of cardiovascular drug use. Significant estimate differences between the two groups (with & without MVD) are indicated by non-overlapped 95% CIs. Abbreviations: LLA, lipid lowering agent; CCB, calcium channel blocker; ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin II receptor blocker; AH, antihypertensive; MVD, macrovascular disease; CI, confidence interval.

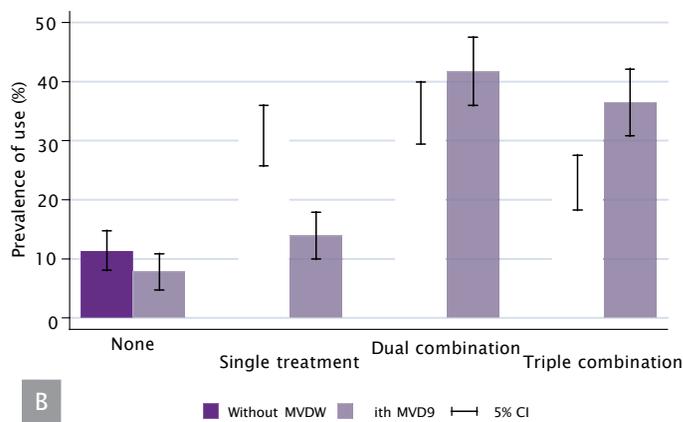


Figure 2. Radar chart of the quality of life models. Different markers connected with their corresponding lines represent regression coefficients of each QoL subscales. A coefficient of 0 means no associations between variables and QoL scores are found. Usages of cardiovascular medication are mostly shown to be subjectively beneficial as markers reside in outer area, while other covariates are shown to have negative effects on QoL indicated by markers sitting within grey area. Abbreviations: QoL, quality of life; CAM, complementary and alternative medicines; GP, general practitioner

on triple combination of cardiovascular drugs was significantly associated with increased scores on physical functioning (coefficient 16.134, 95% CI 6.940, 25.327), general health (10.058, 95% CI 2.649, 17.468) and mental health subscales (12.896, 95% CI 6.562, 15.882). Being on any dual combination was significantly associated with increased scores on physical functioning (coefficient 14.744, 95% CI 5.988, 23.501) and general health (8.334, 95% CI 1.200, 15.467), whereas using a single cardiovascular drug is only significantly associated with increased score on physical functioning (coefficient 12.346, 95% CI 3.943, 20.750). A negative association was found between using three cardiovascular drugs and vitality score albeit modest and statistically nonsignificant (coefficient -1.342, 95% CI -7.927, 5.242).

Conclusion. The use of cardiovascular medications in elderly Australian women with diabetes was reasonably high particularly for the secondary prevention of cardiovascular disease. Use of multiple cardiovascular drugs was demonstrated to be subjectively beneficial in terms of perceived physical functioning, general health and mental health. There remains a possibility that being on more intensive regimens with more cardiovascular drugs will diminish patients' HRQoL since the remaining subscales of the SF-36 were not evaluated. If HRQoL in diabetics is to be more comprehensively assessed, there may be value in employing a diabetes-specific instrument as an add-on to the generic HRQoL instrument.

