

beyond those traditionally provided in primary healthcare. Providing access to community-based services is expected to, for example, help reduce social isolation, provide access to initiatives supporting behaviour change (such as walking groups) and mitigate some of the effects of poverty by access to welfare advice or employment opportunities. Although widespread, the evidence-base for the effectiveness of social prescribing is extremely limited. We aimed to assess the effect of a form of social prescribing, the primary care-based community links practitioner (CLP) programme, on patients' quality of life and wellbeing.

**Methods** Quasi-experimental cluster randomised controlled trial in socioeconomically deprived areas of Glasgow, Scotland. Adult patients ( $\geq 18$  years) referred to CLPs in seven intervention practices were compared with a random sample of adult patients from eight comparison practices at baseline and 9 months. Primary outcome; health-related quality of life (EQ-5D-5L). Secondary outcomes; wellbeing (ICE-CAP A), depression (HADS-D) anxiety (HADS-A), and self-reported exercise. Multilevel, multi-regression analyses adjusted for baseline differences. Patients were not blind to the intervention, but outcome analysis was masked.

**Results** Data were collected on 288 and 214 (72.4%) patients in the intervention practices at baseline and follow-up, and on 612 and 561 (92%) patients in the comparison practices. Intention to treat analysis found no differences between the two groups for any outcome. In sub-group analysis, patients who saw the CLP on three or more occasions (45% of those referred) had significant improvements in EQ-5D-5L, HADS-D, HADS-A and exercise levels. There was a high positive correlation between CLP consultation rates and patient uptake of suggested community resources

**Conclusion** We were unable to prove the effectiveness of referral to CLPs based in primary care in deprived areas on improving patient outcomes. Future efforts to boost uptake and engagement might improve overall outcomes, although the apparent improvements in those who regularly saw the CLPs may be due to reverse causality. Further research is required before wide-scale deployment of this approach.

## Pregnancy/Maternal Health 1

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### THE IMPACT OF CHRONIC HYPERTENSION ON ADVERSE MATERNAL AND PERINATAL OUTCOMES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Background** Chronic hypertension affects up to 5% of all pregnancies, and this is expected to rise due to increasing prevalence of maternal obesity. This study aimed to systematically review observational studies to investigate the risk of adverse perinatal outcomes among pregnant women with chronic hypertension compared with normotensive women.

**Methods** Medline/PubMed, EMBASE, and Web of Science were searched (from first publication until 10th January 2019) to identify peer-reviewed articles without restriction on language or study period. We included observational studies based on the following criteria: 1) participants were pregnant

women; 2) exposure was chronic hypertension; 3) comparison was normotensive women; 4) outcomes included measures of at least one of the following: superimposed pre-eclampsia, small for gestational age, stillbirth, preterm birth, caesarean section, neonatal intensive care unit admission, low birth weight, post-partum hemorrhage maternal death and neonatal death. This review is registered in PROSPERO (CRD42019120088).

Two investigators independently reviewed the eligibility criteria, extracted the data and assessed the quality of included studies using the Newcastle-Ottawa tool. A meta-analysis was performed using RevMan 5.3 for each exposure-outcome association, when data allowed. Random effect models were applied for pooling crude and adjusted odds ratios (ORs) respectively. Heterogeneity among studies was assessed using a Cochrane Q statistic and the Higgins  $I^2$  test. Sensitivity analysis was performed by study design, study location, decade of publication, and according to study quality. Publication bias was assessed using Begg's funnel plot and Egger's test. The effect of using antihypertensive medications on the risk of adverse maternal and perinatal outcomes will also be analysed as part of this review.

**Results** Of the 9739 articles identified, 69 studies met the inclusion criteria. Thirteen studies reported adjusted estimates for small for gestational age (including 7,070,558 participants); adjusted pooled OR=1.97 (95% CI, 1.46, 2.67) among women with chronic hypertension compared to normotensive. Similarly, eleven studies reported adjusted estimates for stillbirth (including 15,231,939 participants), with a pooled adjusted OR=2.36 (95%CI, 2.18, 2.55). Four studies reported adjusted estimates for neonatal death, the adjusted pooled OR=2.29 (95%CI, 2.03, 2.60). The analyses of other outcomes are ongoing.

**Conclusion** There are strong associations between chronic hypertension and adverse perinatal outcomes, including small for gestational age, stillbirth and neonatal death. Most studies in this review did not take severity of hypertension into account when comparing the outcomes. This review summarises current knowledge on the association between chronic hypertension and adverse perinatal outcomes and may be used to optimise antenatal care and pregnancy outcomes.

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### MATERNAL SMOKING DURING PREGNANCY AND RISK OF TYPE 1 DIABETES: WHOLE-OF-POPULATION STUDY

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**Background** Evidence about maternal smoking during pregnancy and type 1 diabetes (T1D) risk is inconsistent. Most studies have small numbers of children exposed to prenatal smoking, and some were unable to look at timing of exposure to smoking, or were at risk of bias due to unmeasured confounding. Therefore, the objectives of this study were: 1) to estimate the association between prenatal smoking and T1D risk, looking at the timing of exposure to smoking (throughout pregnancy, first-half, or second-half of pregnancy), with adjustment for a range of confounding factors defined a priori; 2) to perform a negative-control outcome analysis to