

Evaluating the real-world implementation of the Family Nurse Partnership in England: a data linkage study

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Scientific summary

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Scientific summary

Background

The Family Nurse Partnership (FNP) is an intensive home visiting programme supporting young first-time mothers, which has a strong evidence base from several randomised trials in the USA. Mothers enrolled in the FNP receive up to 64 home visits by a dedicated family nurse, from early pregnancy until the child's second birthday. The FNP aims to improve birth outcomes, child health and development and promote economic self-sufficiency among young mothers. Although a randomised trial of the FNP in England found no evidence of benefit on smoking in pregnancy, birthweight, hospital admissions before age 2 or second pregnancy within 2 years, improved cognitive development outcomes were reported, and there remains strong support for the programme locally.

Our population-based study used longitudinal linked observational data between the health, education and social care sectors to evaluate the effects of FNP on outcomes of eligible mothers and their children up to age 7 and generated evidence on the factors that may influence effectiveness and programme engagement (including participant and programme characteristics). We aimed to generate evidence on which groups of mothers and children benefit from the real-world implementation of FNP in England in order to inform the targeting and commissioning of services.

Objectives

1. Determine the rate of and characteristics associated with enrolment in FNP among young mothers across local authorities in England.
2. Determine the effect of FNP on maternal and child outcomes, including identifying which families benefit the most from FNP.
3. Identify contextual and programme factors that might influence the effect of FNP.

Methods

We created a linked cohort of all mothers aged 13–19 using data from health, educational and children's social care and defined mothers enrolled in FNP or not using FNP system data. Propensity scores based on pre-enrolment maternal characteristics were used to create matched groups for analysis.

Setting

One hundred and thirty-six local authorities in England with active FNP sites between 2010 and 2019.

Participants

Mothers aged 13–19 at last menstrual period with their first live birth between April 2010 and March 2019, living in a FNP catchment area and their firstborn child(ren).

Interventions

The FNP includes up to 64 home visits by a family nurse from early pregnancy until the child's second birthday and is combined with usual health and social care. Controls received usual health and social care alone.

Main outcome measures

Indicators of child maltreatment (hospital admissions for injury/maltreatment, referral to social care services); child health and development (hospital utilisation and education) outcomes and maternal hospital utilisation and educational outcomes up to 7 years following birth.

Data sources

Family Nurse Partnership Information System data on programme participation linked with hospital admissions, outpatient referrals/attendances and accident and emergency (A&E) attendances from Hospital Episode Statistics and information on pupils attending state schools or children in contact with social care services in England from the National Pupil Database.

Results

Objective 1

Of 110,520 eligible mothers aged 13–19 years who gave birth between April 2010 and March 2017, 25,680 (23.2%) were enrolled in FNP: 14% were aged 13–15 years. Enrolment rates varied across 122 sites (range: 11–68%). Areas with more eligible mothers had lower enrolment rates. Enrolment was higher among mothers aged 13–15 (52%) than 18–19 year-olds (21%). Only 26% of mothers with markers of vulnerability (including living in the most deprived area decile or previous mental health-related hospitalisations) were enrolled.

Objective 2

Indicators of child maltreatment: we found no evidence of an association between FNP and indicators of child maltreatment, except for an increased rate of unplanned admissions for maltreatment/injury-related diagnoses up to age 2 for children born to mothers enrolled in FNP [6.6% vs. 5.7%, relative risk (RR) 1.15; 95% confidence interval (CI) 1.07 to 1.24] and weak evidence of a reduction in the percentage of children with a child protection plan for those born to mothers enrolled in FNP (5.1% vs. 6.1%, RR 0.84; 95% CI 0.71 to 1.00).

Child health and developmental outcomes: FNP was associated with an increase in the number of children with ≥ 1 unplanned admission for any diagnosis up to age 2 and the number of children with ≥ 1 A&E attendance by age 2 and age 7. There was weak evidence that children born to FNP mothers were more likely to achieve a Good Level of Development (school readiness) at age 5 (57.5% vs. 55.4%, RR 1.05; 95% CI 1.00 to 1.09). There was no evidence of a difference between groups in Special Educational Needs provision or attainment at Key Stage 1, but FNP was associated with an increase in the percentage of children registered for Free School Meals (51.2% vs. 46.7%, RR 1.09; 95% CI 1.04 to 1.14).

Maternal outcomes

Mothers enrolled in FNP were more likely to have unplanned hospital admissions for any diagnosis (and for adversity and mental health diagnoses) in the 2 years following birth, compared with mothers who were not enrolled. This effect persisted until 7 years following birth, though the size of the effect

decreased over time. Mothers enrolled in FNP were less likely to have a subsequent delivery within 18 months of the index birth (8.4% vs. 9.3%, RR 0.92; 95% CI 0.88 to 0.97) compared to those who were not enrolled.

Objective 3

Fifty-eight per cent of mothers enrolled in FNP completed the programme (42% left early). Attrition was 8% during pregnancy, 23% in infancy (between birth and 1 year) and 19% in toddlerhood (between 1 and 2 years). Mothers received on average 38 visits and 42 hours of contact time with family nurses during the programme. Younger and more vulnerable mothers received higher numbers of visits and were more likely to achieve fidelity targets for the expected number of visits at each stage of the programme. After adjusting for these characteristics, mothers who met the target for the number of expected visits in pregnancy were less likely to have a subsequent birth within 18 months than those who did not meet the target; children born to mothers who met the target in infancy and toddlerhood were more likely to have an unplanned hospital admission for maltreatment/injury up to age 2 than those who did not meet the targets in these stages.

Conclusions

Our findings support previous evaluations of FNP in England, which show no evidence of an impact on child maltreatment outcomes but some weak evidence that FNP is associated with improvements in some child development measures.

Limitations

Mothers enrolled in FNP were more vulnerable than those who were not, but we could only control for maternal characteristics associated with enrolment that were captured in administrative data. Residual confounding could have limited our ability to detect beneficial effects of the programme. The weak evidence for small improvements in school readiness as measured by a Good Level of Development, and reductions in the number of rapid repeat pregnancies may therefore reflect larger positive effects of the programme. As these outcomes were the only 'positive' effects amongst the many outcomes that were evaluated, they could be due to chance.

There are challenges in interpreting outcomes captured in administrative data: the increased rates of unplanned admissions and A&E attendances in the mother and child associated with FNP may reflect higher rates of health problems or appropriate care seeking when a health problem such as injury occurs as a result of advice and support from family nurses. This finding could therefore be interpreted as demonstrating that family nurses can have a long-term effect on maternal health care-seeking behaviours.

This study was not designed to identify effects on a range of other important outcomes, including changes in self-reported maternal mental health, well-being, confidence, behaviour and mother/parent-child engagement and interaction.

Implications

Despite reductions in teenage pregnancies over recent decades, there remains a significant population of young and vulnerable mothers in England who need intensive support. Currently, the majority of these mothers are not receiving support from FNP, as it is not offered in all areas and is only offered to around one in four mothers in areas in which it is commissioned. Expecting to detect effects of home visiting that starts in pregnancy on birth outcomes and on relatively insensitive child development measures and other child outcomes may be unreasonable in the context of social disadvantage, discrimination and other challenges that adolescent mothers face before, during and after pregnancy. However, there is strong support for FNP locally, and FNP practitioners report that mothers participating in the programme develop more reflective parenting and awareness of their child's needs.

Without better evidence, removing support for young mothers could be harmful, especially in the context of increasing social disadvantage and widespread health visitor shortages. There remains uncertainty about whether it is better to commission highly intensive services like the FNP versus enhanced universal services.

Recommendations for research

More research is needed to understand which elements of intensive interventions are most effective, for whom and when and to help inform decisions about whether it is better to commission highly intensive services for a small portion of the target population or to extend and enhance universal services to better support all adolescent mothers.

More research is needed to understand the effects of the programme on mothers who are not enrolled in FNP: we do not yet know if FNP diverts resources away from the usual care that an adolescent mother should receive or if FNP has a positive effect on mothers not enrolled in the programme through shared learning and practices.

Robust evaluation is needed of modifications to FNP, including changes in the Accelerated Design and Programme Testing sites, outcomes for mothers aged 20–24 years, outcomes for fathers and outcomes for subsequent children.

Better measures of changes in maternally reported well-being, confidence, mental health, parent–child interaction and child behaviour would improve evidence on whether the programme affects mothers and their children and how.

Study registration

The study is registered as NIHR CRN Portfolio (42900).

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