Nurse home visits to maternal-child clients: a review of intervention research

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CRD summary
This review evaluated the effectiveness of nurse-led home-visiting interventions for maternal-child clients. The author concluded that although many issues were addressed using various interventions and outcome measures, an appropriate theoretical understanding should represent the focus of future research. Although the reliability of the findings is unclear due to potential biases in the review, the author's conclusions accurately reflect the evidence presented.

Authors' objectives
To evaluate the effectiveness of nurse-led home-visiting interventions for mothers and children.

Searching
MEDLINE, CINAHL, and PsycINFO were searched for papers published from 1980 to 2000; the search terms were reported. Reference lists were also screened for additional articles of interest.

Study selection
Study designs of evaluations included in the review
Experimental study designs were eligible for inclusion. The duration of follow-up in the included studies ranged from none to 15 years.

Specific interventions included in the review
Studies of home-visiting interventions using registered nurses, and with the independent variable designed by the researcher, were eligible for inclusion. Nineteen different nursing activities were reported amongst the included studies. The activities included: assessment and guidance; counselling and referral; the development of nurse-client relationships and social support; plus a variety of health and developmental skills promotion activities for parents and children. The included studies varied greatly in the number of home visits (mean 14.6, range: 1 to 71) and frequency (mean once every 4 weeks, range: weekly to every 2 months). Full details of the activities were given in the paper.

Participants included in the review
Studies of nursing interventions targeted at pregnant women or mothers with young children were eligible for inclusion. The majority of the studies included participants who were either pregnant or postpartum, with multiple risk factors such as teen or single parenthood, low income and poor levels of social support, substance abuse, and (more generally) at risk of producing a low birth weight baby. The characteristics of the communities where the interventions took place were not well described in the primary studies, although most were in urban areas serviced by large medical institutions. The included studies originated mainly in the USA; others were set in Australia and Taiwan. Most of the participants were African American; others (where reported) were Caucasian or of mixed race.

Outcomes assessed in the review
Inclusion criteria for the outcomes were not explicitly stated. A wide variety of outcomes were measured in the review: birth weight; education; use of health services; substance use; family abuse; social, emotional and physical health; employment; and breastfeeding rates. Most studies assessed outcomes immediately post-intervention. Details of the various outcome measurement tools were reported.

How were decisions on the relevance of primary studies made?
The author did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The author reported study quality with respect to sample size calculation; description of the intervention and training of
nurses; methods used to select the sample; and the reliability and validity of the methods used to measure outcomes. In addition, a rating (Fawcett 1999) was given for the presence of a theoretical framework to explain the mechanisms for intervention success. Briefly, studies were scored on a scale of 0 to 3; where 0 was the absence or implicit use of theoretical framework, and 3 was when a framework was explicitly detailed and fully applied to demonstrated links between client problems, type of nursing intervention and outcomes. Full details of the criteria were given. The author did not state how these aspects of the quality assessment were performed.

Data extraction
The author did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

For each study, results for individual outcome measures were classified as positive or negative (no details were given of the methods used for classification).

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative. Initially, studies reporting positive results were grouped by outcome and discussed separately. Then, studies were grouped by outcome with positive and negative studies discussed together.

How were differences between studies investigated?
Differences between the studies were discussed in the text with respect to intervention content, target population and problem, and outcomes addressed.

Results of the review
Thirteen studies (n=4,708) were included in the review. Sample sizes ranges from 30 to 1,970 (mean 362, median 147). Most of the included studies involved some randomisation of the participants to the treatment and control groups.

Three studies reported sample size calculations. All studies used convenience samples. Less than half of the studies reported the frequency and length of home visits, or explained the rationale for implementation. The reliability and validity of the outcome measures was inconsistently reported. Drop-out rates (reported in 11 studies) ranged from 2 to 35% and were higher in the 2 longer term interventions. Training to deliver the intervention deliverers was reported in 8 studies. None of the studies achieved the highest rating for the full application of a theoretical framework to explain success factors. Three studies scored 1, 2 studies scored 2 and 8 studies scored 0.

Positive intervention effects were reported for improvement in the physical health of mother and child (4 studies, n=1,805) and, specifically, in pregnant women (2 studies, n=1,539), improved maternal mental health, improved parent-child interactions and home environment (1 study, n=181), perceptions of infant behaviour (1 study, n=30) and fewer incidents of child abuse (2 studies, n=1,539). In terms of child health, one study (n=114) found fewer low birth weight babies (less than 2,500 g) and another (n=145) reported fewer respiratory problems. Two long-term studies (over 2 years) showed improved child development and intelligence quotient (n=437). Three studies (n=1,713) showed reductions in the use of health care services, including emergency room contacts. More nursing contact was associated with less ongoing drug abuse and improved compliance with primary care in one study (n=70). The long-term sustainability of the outcomes was not addressed in the majority of studies. However, 2 studies over 3 and 15 years (n=1,139 and n=400, respectively) demonstrated positive effects upon the spacing between births of subsequent children, use of welfare services, child and substance abuse, and the number of criminal offences.

Despite several positive effects (reported above), an absence of effect was noted in 3 studies and conflicting outcomes were reported amongst others. For example, one of 3 studies reported improvements in the use of health services (the other 2 studies reported no improvements); two of 4 studies reported improvements in child development and cognition (the other 2 studies reported no improvement); and one of 4 studies reported improvements in low birthweight and pre-term birth (the other 3 studies reported no improvement).

Full details of the individual studies and their results were given.
Authors' conclusions
The review identified a wide range of client problems that have been addressed using a variety of nursing interventions, with about half of the included studies achieving the target outcomes. However, a theoretical link between problem, intervention and outcome was not evident in the majority of studies.

CRD commentary
The review question was appropriately broad for this exploratory review. The inclusion criteria were clearly stated for the interventions, participants and study design; inclusion criteria for the outcomes were not specified, which raises the possibility of biased reporting of the outcome measures. An adequate search was carried out for published material, but the apparent lack of an attempt to track unpublished data is a potential source of bias. Further biases, as well as reviewer errors, might have been introduced by the lack of rigour in the review process; no details of the review process were reported. The author appropriately discussed some quality criteria relevant to this topic area.

The results data presented were insufficient to confirm the author's classification of findings as positive or negative. Focusing initially on only positive results and then only briefly discussing outcomes that varied amongst the studies makes interpretation of the entire body of the evidence difficult. Several studies reported multiple outcomes and the primary outcomes were not indicated; this meant it was not possible to determine the proportion of studies that reported positive results for the targeted outcomes. The substantial heterogeneity present in the included studies was accurately reflected in the author's conclusions. However, the lack of reporting of review methods, lack of results data, and reporting of multiple outcomes mean that the reliability of the review is unclear.

Implications of the review for practice and research
Practice: The author did not state any implications for practice.

Research: The author stated that future research should consider culturally diverse samples; use middle-range practice theory (including exploration of the processes of nurse-client interaction, and dosage issues to link problems, interventions and outcomes); report a clear definition of the intervention under investigation (including dose and content); use power analysis to determine the sample size; and report the reliability and validity of the outcome measures.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.