

Examining the Lasting Effects of the Nurse-Family Partnership on Children Born to High-Risk

Families

Taylor Lechert

University of California, Irvine

Abstract

Introduction: The Nurse Family Partnership (NFP) attempts to combat the lack of resources and knowledge in high-risk families and women who are pregnant for the first time. This paper assesses the effect of the NFP on child development.

Methods: Google Scholar, CINAHL, PubMed, and Trip were used to conduct a literature review. Articles chosen were randomized control trials and involved implementation of the NFP with a longitudinal follow-up of the children.

Results: Two out of three studies demonstrated that the NFP positively affected academic success of the children; two out of three studies demonstrated that children who received the intervention had less emotional/behavior issues.

Discussion: All studies were randomized control trials without dropout. Studies utilizing objective data had more accurate results than those utilizing self-report. There was a discontinuity of care in one study and no way to measure visit content and conduct in any of the studies.

Conclusion: Results were most pronounced in low-resource and school-age children. Nurses should recruit high-risk clients and advocate for programs such as the NFP. Further research should strive to standardize measurements, include additional follow-ups, and consider pregnancy and parental outcomes.

Introduction

Background

High-risk families are defined as facing problems involving violence, substance abuse, mental illness, unemployment, and other financial struggles (Families at risk, n.d.). Children themselves should not be viewed of as at-risk themselves, but the entire family should be viewed as an at-risk unit, as a family dynamic involving poverty and single parent headedness may hinder the development of the children (Moore, 2006). Other factors that affect the outcomes of children are the parents' limited education, smoking and mental health issues (Chittleborough et. al, 2011). The environment in which a family resides in also contributes to familial risk factors, as children raised in areas with high crime rates and low levels of educational attainment puts children at risk for detrimental outcomes (Moore, 2006). Parents living in violent and disadvantaged areas may be more prone to stress and having a lack of knowledge of parenting and childcare, which puts children at higher risk of abuse and neglect (Centers for Disease Control and Prevention, 2016). Children from high-risk families were more likely to engage in risk-taking behaviors than children from middle-and high-income families. In addition, approximately twenty-nine percent of children born to at-risk families do not complete high school, and even fewer end up pursuing higher education (Kent, 2009).

Home visitation, especially programs implemented by public health nurses, can be effective relieving factors that at-risk families face as well as the risks their developing children face (Supplee and Adirim, 2012). Many programs exist, but the Nurse-Family Partnership (NFP) has been specifically shown to be effective in intervening and making changes within these family systems (MacMilan et. al, 2009). NFP targets at-risk, first time mothers and their children and follows them through the child's 2nd birthday, with visitation performed by a nurse, usually

public health nurse certified, beginning as early as possible during pregnancy. NFP has three primary goals: to improve the health of pregnancies; to promote the health, development, and safety of the child; and to help mothers with family planning, continuing their education, and finding stable work. Secondary goals of the program include introducing needed health and social services to families as well as supporting the relationships within the family and with friends and the community (Thorland, 2016).

Although there are interventions being tried in these communities, these communities and their risks remain due to ineffectiveness of implementation. Existing home visitation programs may have difficulty recruiting families who need their services the most. Recruitment usually takes place during health care encounters, and when considering the social determinants of health, high-risk families are already less likely to schedule regular health care or attend well visits and checkups due to lack of access and knowledge. Women in this category are also less likely to seek prenatal care in the first place, where a lot of the maternal-child nurse visitation programs are recruiting.

Establishment of a relationship between the mother/family and the public health nurse, as well as with the mother/family and a healthcare system, sets children up for many years of success. Previously, the impact on the mothers involved in nurse home visitation programs has been examined. A recent study examined the NFP's effectiveness in a qualitative manner, where former clients interviewed spoke positively about their NFP experience, describing their nurses as not only an expert on maternal-child health but also as a supportive friend that helped to shape them into better parents (Landy et. al, 2012).

The aim of this particular project is to examine the long-term effects of the NFP on the children of the high-risk families; specifically, academic achievement and educational success as

well as presence of behavioral/emotional health problems at various stages of development, years after the completion of the program, through a literature review.

Nursing Significance

The nurses' role involves ensuring the mother has access to adequate prenatal care, educating the family in regards to parenting, and helping them access resources as needed after the child is born, especially in setting up primary health care (Nurse-Family Partnership, 2011). The program and its effects on the family as a whole emphasizes the importance of the maternal and child public health nurse's role as he/she targets the communities that need this type of support the most. The nurse must also be responsible for identifying and recruiting families he/she deems as appropriate for the intervention in any and all settings of practice.

Methods

The following key words were used to search for the topic of interest and find appropriate literature to support it: "home visiting", "prenatal and infancy", and "follow-up". The search and review of literature was conducted utilizing Google Scholar, CINAHL, PubMed, and Trip. Using these key terms, CINAHL displayed six results and the PubMed search returned 12 results. However, Google Scholar displayed 27,100 results and the Trip search returned 555 results.

To further narrow down the results Google Scholar and Trip, only articles in English were reviewed, as well as those studies conducted in the United States within the last 10 years. This resulted in 22 article results on Trip and 18,000 article results on Google Scholar. To continue narrowing down the Google Scholar results, "Nurse Family Partnership" was added to the key words, which still yielded 15,800 results, so only the first few pages of results were skimmed for potential articles. Similar articles were found across the various databases utilized.

The final three articles for the paper were selected based on the relevance to the research question, specifically focusing on the long-term effects of the home visitation programs on the children involved. Three studies were selected that utilized the NFP as their intervention and randomized controlled trial as the design.

Results

All three studies examined the long-term effects of prenatal and infancy nurse home visitation through the NFP. Although each article examined child outcomes in different ways, all three articles included the following two themes: educational/academic achievement and emotional/behavioral problems.

Educational/Academic Achievement and Success

Two out of three studies demonstrated that the NFP visits had a positive effect on educational and academic success and achievement in children in the NFP program, while one study showed insignificant results.

Kitzman and colleagues (2010) utilized Peabody Individual Achievement Tests (PIAT) to measure academic achievement. Children in the interventional group scored higher in reading and math on PIAT at age 12 than the control group, with mean scores of 88.78 and 85.70, respectively (Mean Difference (MD)=3.07 (0.76 to 5.39), 95% Confidence Interval (CI), $p=.009$). Results from traditional group-administered achievement tests were also examined, and children in the follow-up group who received the intervention also scored higher in the subjects of reading and math than the control group, with mean scores of 40.52 and 34.85, respectively (MD 5.67 (0.80 to 10.55), 95% CI, $p=.02$). The GPAs of the children were also examined by Kitzman and colleagues (2010), and those in the intervention sample had higher reading and

math GPAs in grades 1-6 than the control group, with GPAs of 2.46 and 2.27, respectively (MD=0.20 (0.02 to 0.37), 95% CI, $p=.03$).

Olds and colleagues (2014) utilized the Leiter Sustained Attention Scale to measure sustained attention in children at ages 4, 6, and 9. In this study, children were found to have higher rates of sustained attention in the nurse-visited group than the control group, with rates of 9.83 and 8.80, respectively (MD 1.04 (0.31 to 1.77), Effect size(ES)=0.36, 95% CI, $p=0.006$). The difference in sustained attention was more pronounced in children at age 6 (Control (C)=8.32, Intervention(I)=9.28, MD=0.96 (0.01 to 1.91), ES=0.33, $p=.048$) than children at age 9 (C=9.17, I=9.25, MD=0.95 (-0.10 to 2.00), ES=0.33, $p=.08$). The Peabody Picture Vocabulary test was used to measure receptive language in children at age 6 years, and the Preschool Language Scale was used to measure receptive language in children at ages 2 and 4 years; for all ages, the nurse visited children scored higher on average (C=89.01, I=92.96, MD=3.95 (0.81-7.10), ES=0.30, $p=.01$).

Eckenrode and colleagues (2010) found no significant treatment effect in high school graduation rates between the intervention group and the control group, with rates of 70.6% and 74.5%, respectively (Relative risk(RR)=0.95 (0.78 to 1.15), 95% CI).

Emotional and Behavioral Problems

Two out of the three studies demonstrated that the NFP visits reduced the incidence of emotional and behavioral problems compared to those who did not receive the intervention, while one study showed insignificant results.

Eckenrode and colleagues (2010) reported that girls in the intervention group were less likely to have been arrested (I=10%, C=30%, RR=0.33, 95% CI) and tended to have fewer convictions (I=4%, C=20%, RR=0.20, 95% CI) when compared to the control group. Girls in the

interventional group also had less mean lifetime arrests than the control group, with means of 0.10 and 0.54, respectively (Incidence risk ratio (IRR)=0.18, 95% CI). Girls who received the intervention also had less mean lifetime convictions than the group that did not receive the intervention, with means of 0.04 and 0.37, respectively (IRR=0.11, 95% CI).

Eckenrode and colleagues (2010) found no significant treatment effect in binge drinking on the children in the follow-up study, as 31.8% of the control group and 35.8% of the intervention group self-reported binge drinking (RR=0.88, 95% CI). No significant interventional effect was found on illicit drug use either, with 51.9% of the control group and 52.6% of the intervention group self-reporting drug use (RR=0.94, 95% CI).

Kitzman et. al (2010) found that children in the intervention group reported less cigarette, alcohol, and marijuana use than the control group in the last 30 days, with incidences of 1.7 and 5.1, respectively (Odds ratio (OR)=0.31 (0.09-1.07), 95% CI, $p=.04$). The number of substances used in the past 30 days was also significantly lower in the nurse visited group than the control group, with numbers being 0.02 and 0.08, respectively (Incidence ratio (IR)=0.22 (0.06-0.83), 95% CI, $p=.02$); as well as the number of days of substance use, with an average of 0.03 for the nurse visited group and 0.18 for the control group (IR=0.15 (0.04-0.65), 95% CI, $p=.02$).

Kitzman and colleagues (2010) also examined behavioral problems, measuring rates of internalizing behavioral disorders from self-report. Children who received the intervention were less likely to have internalizing behavioral disorders than the control group, with rates of 22.1% and 30.9%, respectively (OR=0.63 (0.40-1.00), 95% CI, $p=.04$). External and total behavioral problems were measured by the observations of teachers and parents as well as self-report. However, the study found there to be no significant difference regarding external behavioral

problems for the nurse-visited group and the control group, with rates of 19.7% and 17.8% respectively (OR=1.13 (0.71 to 1.81), 95% CI, $p=.60$). There was also no significant difference on total problems, with 23% of the nurse-visited group and 19.8% of the control group being affected (OR=1.26 (0.81-1.97), 95% CI, $p=.31$).

Olds and colleagues (2014) found no significant results regarding borderline or clinical internalizing, externalizing, and total behavioral problems or attention dysfunction.

Discussion

Internal Validity

A strength across all three studies is the use a randomized control trial. Randomized controlled trials have been considered the “gold standards” in research, as any differences in the control and intervention groups can be attributed to the implementation of the intervention without the influence of other compounding factors, therefore allowing causal relationships to be determined (Barton, 2000).

Another strength across all three studies was a lack of dropout of families receiving the intervention. However, there was a dropout of nurses implementing the intervention in the study performed by Kitzman and colleagues (2010). Many nurses left the program before the conclusion of the visits due to a nursing shortage in Memphis at the time, leaving 37% of families with a discontinuity of care, which may have affected delivery of the intervention.

An importance weakness to consider is that none of the researchers across all three observed interview content and nurse conduct. If it could be confirmed that the intervention was standardized and consistently implemented with minimal intervention, then the effects of implementation could be more accurately attributed to the intervention itself, thereby strengthening the fidelity. Although the research teams could have received consent from the

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patients and approval from the IRB to monitor visits, home visits are private and involve forming trusting relationship and sharing of sensitive, confidential information. If clients were to feel intruded on, they be reluctant to open up or take advantage of the resources available to them and thereby not fully benefit from the intervention (Roggman, 2001). It is possible that variations in implementation may have contributed to insignificance in results.

Two out of three studies utilized self-report in the measuring of results, which may have created bias. Kitzman and colleagues (2010) measured the rate of internal behavioral disorders from self-report of the 12 year olds in the follow-up. There were more children in the control group than in the interventional group that self-reported having an internal behavioral disorder, but complete disclosure cannot be guaranteed; for example, it could have been possible that additional children that received the intervention had internal behavioral disorders but failed to self-identify. Self-report used alongside more objective forms of measurement, such as parent and teacher observational reports on children's external and total behavioral problems in the same study, increases accuracy of findings. Olds and colleagues (2014) utilized Achenbach scores, Conners' Continuous Performance Tests, and the Clinical Conference Index when measuring these same outcomes in a different group of children. Although Olds and colleagues (2014) found none of their behavioral data to be significant, it can be said that their form of measurement, or use of objective data, increased the fidelity of the study. Eckenrode and colleagues (2010), on the other hand, only used self-report to measure all factors considered in the follow up. This type of reporting may be inaccurate based on how comfortable the child with disclosure; interviewees tend to be less honest about sensitive issues such as drug use and sexual activities than about more benign topics (Hoskin, 2012).

External Validity

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Individually, the studies each have their own strengths and weaknesses but each study demonstrated some positive effect on at least a portion of the intervention group, with each study considering a different portion of childhood and young adult life. The NFP, by definition, is designed to serve the underserved, and the program should be specifically targeting these populations. The intervention cannot be generalized to women who have been pregnant before, who are older and experienced, and who are middle-class or higher. The intervention can be generalized to women who are young and inexperienced, pregnant for the first time, and of a low socioeconomic class.

Implication

Implications for Nursing Practice

Public health nurses play an important role in home visits, serving as the bridge between the family at risk and community resources as well as health knowledge. Nurses providing the intervention should be culturally sensitive and consider the strengths and individual strengths of the family when goal-setting. If nurses are unable to form a strong connection with the family, a trusting nurse-client relationship is not formed and the intervention is not as effective.

In terms of clinical nursing, it is critical for nurses in hospitals and clinics to identify high-risk families and connect them to resources such as the NFP. This is especially for those working specifically with underserved, at-risk populations. Nurses should make use of their assessment skills regardless of their workplace to identify the high-risk families, women, and children that could benefit. Clinical nurses could possibly develop scales or assessment tools to make this process more standardized throughout different areas of practice.

Based on the effective outcomes shown by the studies reviewed as well as the effectiveness of outcomes measured in each individual study, the program should be advocated

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for by nurses everywhere. In their practice, nurses should always advocate for and support the programs that can benefit their clients, especially early prevention and intervention programs, to high-risk families. Clinical nurses can always make the transition to the public health realm and apply to work in these programs as well.

Implications for Future Research

Further studies are needed to compare children using the same parameters and the same measurement types to ensure continuity and accuracy. Multiple studies could be done involving a single age group so that measurements can be standardized and applicable to the population considered. Studies performed to examine effectiveness of the NFP should also focus on pregnancy outcomes as well as outcomes for the parents, as the NFP tries to target all of these measures. Future studies should either be racially diverse, as the Kitzman et. al (2010) study consisted primarily of African American women and the Eckenrode et. al (2010) study consisted primarily of white women. If samples happen to not be racially diverse, results should not be over-generalized. Additional follow-ups could be conducted with the younger children involved in the studies to determine how their teen and young adult lives are affected by the long-term impact of the intervention.

Conclusion

The Nurse Family Partnership has positive effects on various aspects of childhood outcomes in different populations across the board. The program can be looked at as having positive effects on the populations it serves in long-term sense. The Kitzman team (2010) and the Olds team (2014) study showed that the NFP positively affects a child's educational attainment and academic achievement. The Eckenrode team (2010) and Kitzman team (2010) displayed a reduction in emotional and behavioral problems in children and teens.

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It can be concluded that the program's longitudinal effects are most prominent in school-age children, especially regarding educational achievement. The differences in outcomes between children who received the intervention and those who did not in all three studies were more pronounced in children and teens born to low-resource families than families that had access to more resources and were better off financially. When there is greater room for improvement of outcomes, improvements due to implementation of an intervention become more obvious than groups that are already doing well, as there is less room for improvement.

Although further research is needed for longer-term effects, especially when considering success in higher education, as well as for accuracy of measurement of outcomes, nurses should be identifying families at risk that may benefit from the partnership and should be advocating for their at-risk patients and families, connecting them to the resources they need to strive.

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