FAMILIES FIRST PROGRAM EVALUATION

Evaluating the effectiveness of the Families First home visiting program in improving the well-being of at-risk families with preschool children

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Healthy Child Manitoba
Putting children and families first
Manitoba

EXECUTIVE SUMMARY

The aim of this evaluation was to examine if the well-being of at-risk families was improved by participating in Manitoba's Families First home visiting program.

Background:

The Families First home visiting program provides services to families with children (from prenatal to five years old) who are living in what are considered at-risk conditions. These can include children with congenital health problems, teenage parents, parents in financial difficulties, or parents with mental health problems.

Research suggests that home visiting programs may improve the well-being of these children and their families. A study by D.L. Olds and colleagues (1997) found that among respondents of low socio-economic status, women receiving home visits, compared to a control group who did not receive the visits, had fewer subsequent pregnancies and births and longer spaces between their children. They also were less likely to use food stamps, or require services from Medicaid, (a US health service for low-income Americans). Women receiving home visits were also less likely to be substance abusers, be arrested for or convicted of crimes, spend time in jail or be involved in reports of child abuse or neglect. Home visitation interventions by public health nurses have been effective in reducing health risk behaviors when the infants of women who are involved in the program reached adolescence (Olds et al, 1997.) While home visiting programs have been evaluated in highly structured and supervised conditions, little research has been done to show that these programs are effective when implemented under real-world service delivery conditions.

Method:

Public health nurses in Manitoba screened almost all mothers with newborns for risk factors affecting the well-being of children using the Families First screening form. Families who had three or more risk factors using this screen were then assessed using a Parent Survey. The home visiting program was offered to families who were found to be living in conditions that put their children's well-being at risk. Families with lower levels of risk (but with at least three risk factors) were invited to participate in the comparison (or control) group. Assessments were made at four months, one year and then annually for another four years. Hierarchical linear modeling (a sophisticated statistical technique) was used to test for differences in family results between the program and comparison groups.

Results:

The evaluation was done after controlling for sociodemographic factors, the number of home visits and the quality of the parent-home visitor relationship. The effect size (ES) refers to the magnitude or strength of the impact of the program. Similar, previous studies in the US and Australia typically find effect sizes range between 0.10 and 0.20.

Improvements that were associated with the program included:

- increased positive parenting (ES:0.80)
- decreased hostile parenting (ES:-0.53)
- no change in the overall score for mother's psychological well-being; but three of the six subscales were improved:
  - purpose in life (ES: 0.49)
  - environmental mastery (ES: 0.76)
  - self-acceptance (ES: 0.79)
- increased social support (ES: 0.65)
- increased neighbourhood cohesion (connected with neighborhood; ES: 0.42)

No differences were found between program and comparison groups for neighbourhood safety, maternal depression, use of community services, families' participation in voluntary organizations, delayed child development and reading sessions with children.

Conclusions:

The Families First home visiting program was strongly associated with improved well-being in the Manitoba families who participated in this program evaluation. The magnitude of the program benefits were considerably better than those found in previous evaluations of home visiting programs. These results are encouraging, given the importance of early parental influence and maternal psychological well-being on child development and safety. In addition, the improved social support and neighbourhood cohesion found in this program help protect against other stress factors a family might be experiencing.

While the program appears to have positive effects on neighbourhood cohesion, none were found with neighbourhood safety. Improving neighbourhood safety is beyond the scope of a home visiting program. The evaluation suggests improving access to literacy programs, tracking referrals for developmental delays, and examining alternative approaches to home safety. These results also bring to light concerns about mental health issues. Public health nurses and home visitors have expressed their concern over the small number of mental health services for families given its importance in family functioning and child outcomes.

In conclusion, these evaluation findings suggest that Families First home visiting program contributes to creating more secure, nurturing, stimulating environments for children where they can develop physically, emotionally and socially. Given the strong, beneficial effects of home visiting, continued efforts should be focused on ensuring program quality and improving engagement and retention of families.

INTRODUCTION

The early childhood environment is recognized as important for healthy child development (Irwin, Siddiqi & Hertzman, 2007). Associations have been found between adverse childhood conditions and behavioral, emotional and cognitive results in children (Scannapieco & Connell-Carrick, 2005; Wekerle & Wolfe, 1996). These childhood conditions may include having teenage parents, poverty, parental substance abuse or poor mental health, child maltreatment, harsh parenting styles, or poor parent-child relationships.

Home visiting programs help prevent families with multiple parenting challenges from risking the well-being of their children. These programs consist of regular home visits by nurses, other professionals or trained paraprofessionals. Program objectives differ between programs and may include supporting healthy child development, improving parent-child relationships, increasing maternal rates of employment, connecting families with their communities and decreasing child maltreatment rates.

Home visiting programs have been shown to be effective in decreasing child abuse and improving child well-being (McLeod & Nelson, 2000). M.A. Sweet and M.I. Applebaum (2004) reviewed 60 home visiting programs examining child and family results. In general, families and children in home visiting programs had better results than the control groups. In reviewing different models of home visiting programs, the most effective were two or three years long, focused and built on families' strengths, supported healthy child development and parenting, and increased support systems for families (McLeod & Nelson, 2000).

One of the earliest and most promising home visiting models was studied by D.L. Olds and colleagues (1997). Among respondents of low socio-economic status, women receiving home visits, compared to those who did not, had fewer subsequent pregnancies and births, longer spaces between children, and were less likely to use food stamps, or require services from Medicaid (a US health service for low-income Americans). Women receiving home visits were also less likely to be substance abusers, be arrested for or convicted of crimes, spend time in jail, or be involved in reports of child abuse or neglect. Home visitation interventions by nurses have been effective in decreasing health risk behaviors when the infants of women who were part of the program reached adolescence (Olds et al, 1997.)

D.L.Olds and colleagues (2007) have recently reviewed randomized control trials evaluating the effectiveness of home visiting programs, including their own research described above. The authors note that Healthy Families America (HFA), a home visiting program in the US, have different models of implementation (Hawaii Healthy Start, Alaska Healthy Start, New York State HFA and San Diego trial of HFA) with resulting differences across the sites. Some sites found improved physician visits and emergency room visits, improved maternal health, less use of verbal and corporal punishment, less neglectful behavior, improved child mental development, fewer low birth weights. However, none found decreases in reported child abuse to Child Protective Services.

K. DuMont and colleagues (2008) have recently evaluated the effects of a home visiting program called Healthy Families New York (HFNY) on early child abuse and neglect using a randomized controlled sample of 1,173 families. They found that, compared to control families, HFNY families had 25 per cent fewer reported acts of serious abuse. They also demonstrated differential results depending on the subsample examined. First- time mothers, who started the program at or before 30 weeks of pregnancy, were less likely to engage in minor acts of physical aggression (51 per cent, versus 70 per cent) and harsh parenting in the past week (41 per cent, versus 62 per cent) compared to control group families. Among mothers who were psychologically vulnerable, those in the program were less likely to report engaging in serious child abuse and neglect (five per cent, versus 19 per cent).

The mechanisms underlying the effectiveness of home visitation programs in improving child well-being are not well understood. Many home visitation programs work on the premise that promoting family well-being leads to healthier children. In other words, family factors are a major pathway to improving child health and well-being.

However, D.M. Fergusson and colleagues (2006) suggest that this may not be the case. Specifically, they found that home visitation improved child health, increased preschool education, increased positive parenting, and decreased punitive parenting, child abuse and child problem behaviors. However, this research group found no association between program participation and maternal health, family functioning, family economic functioning and exposure to adverse life events. Based on these findings, they conclude that home visiting programs appear to be working by increasing knowledge and skills in the area of parenting and child development, rather than by modifying long-standing family difficulties. They suggest that home visitation programs should focus on providing parents with new skills, insights and approaches to parenting and use less effort in attempting to resolve long standing family problems.

The provincial government is currently funding the Families First program. The program provides home visiting services to families with children (prenatal to five years old) who are living in what are considered high risk conditions. The program is modeled after home visiting programs in the US, the Hawaii Healthy Start Program and the Healthy Families America model, which showed considerable promise based on early evaluations. The Hawaii Healthy Start Program is a family-centred program that builds and focuses on strengths, emphasizes positive parenting, enhanced parent-child interaction, improved child health and development, and optimal use of community resources.

Manitoba's Families First program (then called BabyFirst) was tested for feasibility in 1998 and was implemented throughout Manitoba in 1999. An evaluation framework was developed at that time and data was collected on an ongoing basis by service providers. Parallel to Families First, which was within the public health system, the Early Start program was implemented within licensed child care centres. The Early Start model had the same goals and used the same curriculum as BabyFirst. However, the home visitors were supervised by child care centre personnel and the children were not recruited at birth. The BabyFirst and Early Start programs were integrated in 2005 as Families First. The data in this evaluation was gathered, almost entirely, from the old BabyFirst and the new Families First programs.

While home visiting programs have been evaluated in highly structured and supervised conditions, little research has been conducted showing that these programs are effective when implemented under real-world service delivery conditions. Results obtained in research settings may not be the same as those obtained in institutional or community settings. Often, compromises are made to the original program which decreases its effectiveness. The purpose of this Manitoba study was to evaluate the effectiveness of the Families First program in improving parenting, parental well-being, social and community support for parents and child well-being when delivered under real-world service delivery conditions.

METHODS

Overview of Research Design

The *Families First Home Visiting Program Evaluation* used a quasi-experimental design. All families with post-partum referrals in Manitoba are screened for risk factors affecting the well-being of children and assessed by a public health nurse. The home visiting program is offered to families who have high levels of risk. Families with three or more risk factors on the universal screen – but with lower levels of risk as assessed by a public health nurse – are asked to participate in the comparison group. Assessments are made at four months and one year, and then annually for the next four years. Hierarchical linear modeling, a sophisticated statistical method, tested for differences in family results between the program and comparison groups. Known risk factors (household income, maternal education, mother's age, etc.) were taken into account to adjust for the different levels of risk between program and comparison families.

Family Recruitment

Families were recruited for Families First through a two-stage process. The first stage included a universal screening for risk factors affecting the well-being of children and the second, an assessment called the *Parent Survey* (described below). Since 1999, Healthy Child Manitoba, in partnership with the regional health authorities, has screened most families with newborns for risk factors affecting the well-being of children. For every post-partum referral, public health nurses ask families about 39 biological, social and demographic factors using the Families First screening form. Included on the screening form are questions about congenital anomalies, birth weight, multiple births, mother's age, education, marital status, mental health and family social isolation and relationship distress.

Families with three or more risk factors are assessed by a public health nurse using the Parent Survey and are offered the home visiting program if they score 25 or more. The Parent Survey assesses families regarding their parenting supports and challenges.

Families who score less than 25 on the Parent Survey are asked to participate in the comparison group. The comparison group is offered regular post-partum care, which includes a few public health visits and referrals to other community supports as required.

Universal screening of families with newborns has been steadily improving to coverage rates of 95 per cent of all births of families with a post-partum referral. However, public health nurses do not obtain a post-partum referral on all births and First Nations families living on reserves are not screened. It is estimated that 83 per cent of all births in Manitoba are screened because it is difficult locating some families once they have left the hospital. Other reasons include family refusal to take part, administrative difficulties with the post-partum referrals and jurisdictional issues that do not permit screening of First Nations families living on reserves. It is estimated that about 35 per cent of program families participated in the evaluation between 2000 and 2007. Therefore, it should be noted that the evaluation results only reflect families who participated.

Service Delivery

The Families First Home Visiting Program is built on the premise that parents with strong attachments to their infants are more capable of nurturing them. Paraprofessional home visitors develop a trusting working relationship with families and build on their strengths. While home visiting support to families can begin during pregnancy, most families enter the program shortly after the birth of their children. Others are referred by community sources when the children are toddlers or older preschoolers. The frequency of home visiting varies from once a week to every three months and visits last between one and two hours, depending on the family's needs. Families may participate in the program for up to three years. Beginning in 2001, paraprofessional home visitors and public health nurses were trained to use the Growing Great Kids Inc (GGK) curriculum

and the Growing Great Families (GGF) Manual (see GGK website for more information). This curriculum serves as a guide for home visits and includes child development, parenting and health information as well as parental and child activities. The GGF manual helps families develop goals and expand coping skills important to improving family functioning. These tools offer both structure and adequate flexibility to support healthy child development and growth in families.

Personnel: Paraprofessional Home Visitors and Public Health Nurses

Two levels of personnel are involved in delivering Families First: paraprofessional home visitors and public health nurses. Home visitors are paraprofessionals who work directly with 10 to 18 families. Some home visitors may have training in health, education or child development and others may have personal experience with parenting under difficult circumstances. Public health nurses provide training, clinical expertise, support and supervision to home visitors.

Home visitors meet weekly with their supervisors to reflect on family issues and home visiting challenges. Both the home visitor and the supervisor participate in a week-long core training session to learn the basic principles of the home visiting program. Additional training sessions are given to home visitors after core training. The decision to hire paraprofessionals rather than nursing professionals was influenced by the existing knowledge of effective home visiting programs at the time, the realities of nursing shortages and the prohibitive costs of nursing salaries. The implementation of Families First preceded research suggesting that nurse home visitors provided stronger program results than paraprofessionals.

Research Assessments

Screening and assessments of children were conducted prenatally or at birth and included a Families First screen and the Parent Survey. Program evaluation assessments were collected when the target child was four months and one year old, then annually for the next four years. Most assessments included in this evaluation were at four months, one year and two years old. This is because most children are enrolled in the program at birth and remain for an average of 16 months,. The evaluation assessments were collected by public health nurses or home visitors and included a safety checklist and screen for child developmental delays completed by home visiting staff and a self-administered parent questionnaire.

The parent questionnaires included measures on parenting, literacy, social support, community and health services use, neighbourhood characteristics, maternal depression, parental health factors and socio-demographic characteristics. Public health nurses and home visiting staff were instructed to offer assistance to families who experienced difficulties in completing the questionnaires, due to language and education barriers.

The evaluation used questions from the National Longitudinal Survey of Children and Youth (NLSCY) which were derived from measures with known validity and reliability. Please see Appendix A for details on each measure. The NLSCY is a long term survey conducted by Statistics Canada to study Canadian children as they develop. (see Statistics Canada website for details). Results variables were derived by calculating the mean scores from the questions. For example, the social support scale has six items rated on a four-point scale (ranging from 'strongly disagree' to 'strongly agree'). Values were given to each response, so that 'strongly disagree' was equal to '1' and 'strongly agree' was equal to '4.' These scores were added and then divided by six to obtain the social support score. High scores indicate higher levels of the outcomes.

Sample Description

Data exist on 1,319 program families (and 301 comparison families) which represents 35 per cent of families that were available for evaluation. It was possible to link program families who were in the evaluation and those not in the evaluation to the Families First screening data for the years 2000 to 2005. Comparisons were made to test for differences between the two groups of families in this subsample. (See Table 1 below) No differences were noted in birth weights, teenage mothers, prenatal care or maternal depression. However, mothers in the program, but who were not in the evaluation, were more likely to be Aboriginal and more likely to have a number of risk factors (receiving social assistance, being single, not have completed high school, smoking).

Implementation data (number of home visits, quality of home visitor-parent relationship) was missing for about half of the sample (860/1620). This represents 18.5 per cent of families who were available for evaluation. As noted in the results section, the strongest results were found after controlling for the number of home visits and the home visitor-parent relationship. There was concern that conducting analyses on half of the samples might give very different and biased results. Sensitivity analyses were conducted to ensure that the results for families who had implementation data were not significantly different from families who had none. The analyses were conducted on the smaller sample with complete data (n=860) without including the implementation variables (number of home visits and the parent-home visitor relationship) and found that results were similar to those in the larger sample with missing implementation data (n=1620). This suggests that this smaller sample is likely representative of the larger sample.

Table1. Differences between Program Families who were in the Evaluation and Those that were not.

Indicators**	Program Families In Evaluation (n=1079)	Program Families Not in Evaluation (n=1645)
Low birth weight	6.6%	6.3%
Teenage mother	19.9%	18.6%
No prenatal care before 6th month	7.3%	10.2%
Maternal depression	26.1%	25.8%
Mother is single*	39.2%	44.5%
Social assistance*	56.2%	64.4%
Mother did not complete high school*	50.5%	60.5%
Mother is Aboriginal*	38.4%	51.1%
Maternal smoking*	43.4%	50.4%

* These indicators were significantly different between the two groups.

Statistical Analysis

Hierarchical linear modeling (HLM) was employed to determine the effectiveness of the Families First home visiting program. HLM is a powerful statistical tool for use with longitudinal data (data gathered over several time points). This statistical method can be used to analyze data regardless of missing observation points. The data for the families in Families First evaluation often had at least one observation point missing. With HLM, the individual family trajectories were tested to see whether they vary from each other. Multilevel analysis takes into account the variation in results between families as well as the variation within families and over time for each family.

The analyses for this program evaluation included two levels of modeling. Level-1 included the individual families' growth trajectories to measure changes within families over time for the results on each family at different time points. Level-2 included the family level variable that remains stable over time (ex: child's gender, Aboriginal status, program allocation, etc.). To adjust for differences between the program and comparison groups, the same variables (covariates) were included in the models. These variables ensure that the effects can be attributed to the program and not to other influences such as: child's age, gender and temperament, mother's age and education, race (Aboriginal), household income, family type (single parent family), social support, neighbourhood cohesion and maternal depression. As previously indicated, the number of home visits and quality of the home visitor-parent relationship were also entered into the model.

Table 2. Baseline Characteristics for Families First Program and for Comparison Groups

Indicators	Program (n=1046)	Comparison (n=220)
Child's age (in months)	4.63*	4.25*
Child's gender (male)	50%*	57%*
Child's difficult temperament	3.16	3.13
Mother's first baby	55%	56%
Mother's age	24.2 ***	27.7 ***
Mother completed high school	47% ***	76% ***
Household annual income	$20,600 ***	$46,900 ***
Mother is Aboriginal	34% ***	18% ***
Mother is single	45% ***	26% ***

* $p < 0.10$ ** $p < 0.05$ *** $p<0.01$

PROGRAM RESULTS

Mean Scores of Program and Comparison Families

At baseline, 1,046 program families and 220 comparison families (Table 2) were compared. Children in the program were older and more likely to be girls, than in the comparison group. Mothers in the program were younger, less likely to have completed high school, had lower household annual income, were more likely to be single and were more likely to be Aboriginal compared to the comparison group.

Table 3 and Table 4 show that differences in unadjusted scores were found between groups. Families First families had poorer scores than comparison families, which was expected because they had higher levels of risk during the screening process. The results changed over time for both groups. Statistical tests (which control for child and parent characteristics) were conducted to determine how these changes compare between groups over time. (See the following section for details.) A number of factors were included in the analyses to control for their influence on results. Separate analyses (not shown) indicated a strong association between positive parenting and psychological well-being and mothers with higher education, being a single parent, good natured child temperament (versus difficult), high social support and low maternal depression.

Table 3. Mean Results for Families First Program and for Comparison Groups (unadjusted)

		Families First			
	n	Baseline	Year One	Year Two	Year Three
Positive parenting	1010	4.57	4.57	4.41	4.29
Hostile parenting	1009	1.56	2.19	2.38	2.39
Psychological well-being	1038	4.54	4.59	*	4.65
Maternal depression	1037	1.79	1.78	1.78	1.71
Social support	1039	3.49	3.45	3.46	3.50
Neighborhood cohesion	1030	2.77	2.82	2.94	2.97
Neighbornood safety	1030	3.05	3.09	3.11	3.15
		Comparison Families			
	n	Baseline	Year One	Year Two	Year Three
Positive parenting	211	4.61	4.59	4.40	4.38
Hostile parenting	212	1.44	1.94	2.23	2.39
Psychological well-being	219	4.90	4.98	*	4.86
Maternal depression	219	1.54	1.44	1.57	1.42
Social support	220	3.67	3.66	3.65	3.68
Neighborhood cohesion	215	3.05	3.10	3.09	3.17
Neighbornood safety	215	3.28	3.26	3.40	3.41

* Psychological well-being was not added to the Parent Questionnaire for the second year, because of concerns of overburdening parents.

Table 4. Rates of Results for Families First Program and for Comparison Groups (unadjusted)

Results	Families First			
	Baseline %	Year One%	Year Two%	Year Three%
Reading daily to child	42.2%	62.8%	67.7%	61.2%
Using community services	85.3%	81.0%	79.5%	75.5%
Volunteering in community	23.5%	30.4%	27.8%	36.9%
Child developmental delay	11.1%	11.2%	26.1%	23.0%
	Comparison Families			
	Baseline %	Year One%	Year Two%	Year Three%
Reading daily to child	39.4%	66.4%	80.0%	78.4%
Using community services	72.2%	71.0%	60.6%	63.9%
Volunteering in community	27.3%	41.0%	42.0%	56.8%
Child developmental delay	10.8%	13.7%	21.8%	12.2%

Results of Statistical Testing

Using the hierarchical linear modeling statistics, the effect size (or magnitude of program effect) was calculated to facilitate interpretation. For example, an effect size of .80 means that the program has improved mean scores by 80% of a standard deviation which is considered a large effect. Most home visiting programs report effect sizes of 0.10 or 0.20.

P-values are indicated in the tables and are statistical terms which quantify the amount of confidence in a result. P-values that are smaller than 0.05 mean that the results are not due to chance. These results are flagged by an asterisk and are considered 'statistically significant.'

Parenting and Psychological Well-Being

As the following table indicates (Table 5), after controlling for sociodemographics, the Families First program appears to have little impact on parenting scores. However, after controlling the number of home visits, the home visitor-parent relationship and sociodemographics, Families First is associated with:

- Increased positive parenting (Effect Size (ES): 0.81). Mothers in the program reported talking, playing and laughing with their children, praising them and focusing their attention on them more than mothers in the comparison group.
- Decreased hostile parenting (ES: -0.53). Mothers were less likely to be annoyed with their children or express negative comments to them than mothers in the comparison group.

Table 5. Hierarchical Linear Modeling for Families First Program in Predicting Parenting and Parental Psychological Well-Being Over Time

	Controlling for Sociodemographics N=1,620		Controlling for sociodemographics & # of home visits N=1,185		Controlling for sociodemographics, # of home visits & home visitor-parent relationship N=860	
Family results	**Effect size‡**	**p-value**	**Effect size‡**	**p-value**	**Effect size‡**	**p-value**
Parenting						
Positive	0.02 (-0.01 – 0.06)	0.359	0.17 (0.11 - 0.24)	0.008*	0.81 (0.57 - 1.04)	0.001*
Hostile	-0.10 (-0.14 - -0.07)	0.007*	-0.23 (-0.28 - -0.18)	0.000*	-0.53 (-0.70 - -0.36)	0.002*
Consistent†	-0.04 (-0.19 – 0.11)	0.806	-0.26 (-0.57 – 0.04)	0.392	-0.57 (-1.96 – 0.81)	0.679
Rational†	-0.12 (-0.25 – 0.00)	0.328	-0.28 (-0.59 – 0.03)	0.374	0.20 (-1.30 – 1.70)	0.894
Psychological well-being						
Purpose in life	0.02 (0.00 – 0.05)	0.343	0.07 (0.02 – 0.12)	0.131	0.49 (0.30 – 0.67)	0.010*
Positive relationships	-0.13 (-0.15 – -0.11)	0.000*	-0.05 (-0.09 – 0.00)	0.266	-0.14 (-0.31 - 0.04)	0.436
Environmental mastery	-0.11 (-0.16 – -0.05)	0.060	0.50 (0.34 – 0.66)	0.002*	0.76 (0.47 – 1.06)	0.010*
Personal growth	-0.04 (-0.07 - -0.02)	0.072	0.00 (-0.05 – 0.05)	0.991	0.09 (-0.13 – 0.32)	0.675
Autonomy	-0.03 (-0.06 – -0.01)	0.192	-0.02 (-0.07 – 0.03)	0.672	0.21 (0.01 – 0.41)	0.305
Self-acceptance	-0.09 (-0.14 – -0.04)	0.180	0.60 (0.43 – 0.78)	0.001*	0.79 (0.53 – 1.05)	0.003*

* Statistically significant at p<0.05

† - Collected on families at Time 2, 3, 4 & 5. Collected from families who are late entry or who have been in the program at least two years. The sample size is more limited.

‡ - Effect size is calculated by: Unstandardized regression coefficient/ pooled standard deviation of outcome variable

No associations were found between the program and rational and consistent parenting. The sample size for these two parenting variables was smaller as they were collected at the two year point and annually for the next four years, the times where the observation points would have been more sparse. Therefore, these analyses are not likely to find differences – even if they exist. This sample is made up of families who were late entry or who had been in the program for at least two years.

Table 5 also indicates that Families First was associated with improved results for three out of six subscales of psychological well-being for parents:

- Self-acceptance (ES : 0.79) Mothers in the program were more likely than mothers in the comparison group to report liking most aspects of their personality, being pleased with their lives and proud of their achievements.
- Environmental mastery (ES : 0.76) Mothers in the program were more likely than mothers in the comparison group to report feeling in charge of their situations and managing the responsibilities and demands of their daily lives.
- Purpose in life (ES : 0.49) Mothers in the program were less likely than mothers in the comparison group to report wandering aimlessly through life, not thinking about the future or feeling that they had little to look forward to.
- No differences were found between comparison and program groups about positive relationships, personal growth and autonomy, or for the total score (all subscales) of psychological well-being.

Table 6. Hierarchical Linear Modeling for Families First Program in Predicting Neighbourhood Factors, Social Support and Maternal Depression Over Time

	Controlling for sociodemographics N=1,620		**Controlling for sociodemographics & # of home visits** N=1,185		**Controlling for sociodemographics, # of visits and home visitor-parent relationship** N=860	
Family results	**Effect size†**	**p-value**	**Effect size†**	**p-value**	**Effect size†**	**p-value**
Neighbourhood cohesion	0.04 (0.02 – 0.07)	0.099	-0.05 (-0.09 - 0.00)	0.284	0.42 (0.22 – 0.62)	0.034*
Neighbourhood safety	0.01 (-0.02 – 0.03)	0.812	0.08 (0.04 - 0.12)	0.075	0.02 (-0.17 – 0.21)	0.902
Social support (family and friends)	0.01 (-0.02 – 0.03)	0.846	-0.03 (-0.07 – 0.02)	0.564	0.65 (0.44 – 0.86)	0.003*
Maternal depression	0.02 (-0.02 – 0.06)	0.549	-0.05 (-0.13 – 0.02)	0.490	0.67 (0.31 – 1.02)	0.059

* Statistically significant at p<0.05

† - Effect size is calculated by: Unstandardized regression coefficient/ pooled standard deviation of outcome variable

Neighbourhood Factors, Social Support and Maternal Depression

Table 6 indicates that after controlling for sociodemographics, the number of home visits and the home visitor-parent relationship, Families First is associated with higher scores:

- neighbourhood cohesion (ES: 0.42) Mothers in the program reported that their neighbours get together to deal with problems, that there are good, local, role models and that neighbours watch over children in the neighbourhood.
- social support (ES: 0.65) Mothers in the program reported that they had family and friends who helped them feel safe, secure and happy, people who they count on in an emergency and someone to talk to about their problems.

No differences were found between the program and the comparison group for neighbourhood safety and maternal depression.

Table 7. Hierarchical Linear Modelling for Families First Program in Predicting Child Development, Daily Reading to Child, Volunteering and Service Use Over Time

	Controlling for sociodemographics N=1,620	Controlling for sociodemographics & # of home visits N=1,185	Controlling for sociodemographic., # of home visits and home visitor-parent relationship N=860
Family results	**Odds ratio (CI)†**	**Odds ratio (CI)†**	**Odds ratio (CI)†**
Child developmental delay	1.04 (0.85 – 1.27)	1.20 (0.82 - 1.76)	0.62 (0.11 - 3.35)
Parent read daily to child	0.82 (0.73 – 0.92)	0.86 (0.70 - 1.07)	1.28 (0.59 - 2.78)
Volunteers in community	0.94 (0.83 – 1.06)	1.03 (0.81 - 1.30)	1.34 (0.51 - 3.52)
Service use			
Social services	1.36 (1.08 – 1.72)	1.43 (0.97 – 2.11)	1.48 (0.33 – 6.69)
Health services	0.84 (0.75 – 0.94)	0.94 (0.75 – 1.17)	1.17 (0.50 – 2.77)
Spiritual/religious services	1.16 (0.92 – 1.45)	1.13 (0.76 – 1.68)	2.76 (0.52 – 14.68)
Use of any services (social, health, religious)	0.93 (0.81 – 1.07)	0.83 (0.63 – 1.10)	1.65 (0.54 – 5.02)
Home safety			
Safe water temperature	0.96 (0.83-1.12)	0.78 (0.67-1.05)	0.48 (0.18 – 1.27)
Smoke detectors present	1.07 (0.86 – 1.34)	2.24 (0.67-7.44)	1.15 (0.73-1.65)
Safe blind cords	1.02 (0.90 – 1.17)	1.07 (0.85 – 1.36)	1.81 (0.81 – 4.03)

† - Odds ratio is the ratio between the occurrence of the family result in the program and its occurrence in the control group. An odds ratio over "1" means that the family result is more likely to occur in the program group. An odds ratio less than "1" means that the family result is more likely to occur in the control group. If "1" is included in the confidence interval, the result is not statistically significant.

Odds ratios were reported for the results outcomes in Table 7. An odds ratio is the ratio between the occurrence of the family results in the program and its occurrence in the comparison group. An odds ratio over "1" means that the family result is more likely to occur in the program group. An odds ratio less than "1" means that the family result is more likely to occur in the control group. If "1" is included in the confidence interval (range where the odds ratio is expected to be) the result is not statistically significant meaning that no differences are found.

Child Development, Daily Reading to Child, Volunteering, Service Use and Home Safety

After controlling for socio-demographics, the number of home visits and the home visitor-parent relationship, no statistically significant differences were found between the program and comparison groups in service use (for a personal problem), volunteering in community organizations, developmental delays in children, reading daily to children or home safety. It should be noted that the analyses show a trend towards a positive impact from the program but these are not statistically significant. For example, the odds ratio for safer blind cords indicate that parents in the program are 1.81 times as likely to have blind cords safely secured than parents that are not in the program, but this is not statistically significant. (These results may be due to chance.) Limitations with the way these factors were measured are discussed in the section called "Discussion of Results".

PROGRAM IMPLEMENTATION RESULTS

Several questions were asked to test if the program was more effective with certain families or in certain delivery systems. It is important to note that these types of analyses require large sample sizes. Not finding differences in this sample does not necessarily mean that these differences do not exist.

Are program effects stronger for families with first-time mothers?

Families First is offered to all families who have parenting challenges, regardless of the number of previous children or previous involvement with child protection agencies. Home visiting experts suggest that home visiting programs may be more effective for first-time mothers. They may be more receptive to instruction and services, more susceptible to change and have not become anxious or frustrated enough to begin to abuse or neglect their children (Dumont et al., 2008). Statistical testing was conducted to determine if first time mothers in the program had improved results compared to mothers with other children. No evidence was found that the program created different results for first-time mothers.

Are program effects stronger in some regions of the province than others?

To improve child and family results, families in home visiting programs must have access to an array of services including: school readiness programs, child care, job training, assistance with finances, food and housing, mental health services, substance-abuse treatment and domestic violence shelters (Daro & Crohn Donnelly, 2002). Northern and rural communities in Manitoba may have reduced access to these services for geographic and demographic reasons. Statistical testing was conducted to determine if families in these regions had poorer program results compared to families in Winnipeg. No evidence was found that the program created different results for northern or rural families.

Are program effects stronger in areas where public health nurses (PHN) work exclusively with Families First than in areas where they have other health program responsibilities along with Families First? Does the program's structure influence the effectiveness of the program?

Families First is delivered in 11 regional health authorities across Manitoba and each region has different program delivery structures. The roles of

public health nurses were specifically examined. Some rural regions (Model A) assign public health nurses to work and focus exclusively on the Families First program. These nurses co-ordinate the program, screen families, supervise home visitors and complete annual evaluations. Other rural regions (Model B) assign public health nurses to the home visiting program and to other public health responsibilites (well-baby clinics, immunizations, school visits). In Winnipeg (divided into 12 community areas), each area has some public health nurses who oversee the Families First program in addition to other public health responsibilities. These nurses are responsible for co-ordinating the program and for supporting home visitors in their roles with families. These nurses, home visitors and case manager public health nurses work as a team to deliver the program. The paraprofessional home visitor receive support and direction from the lead public health nurses as well as several public health nurses who are responsible for the case management of their families. Statistical testing was conducted to determine if these three different models influenced results. No evidence was found that the program created different results for any model.

DISCUSSION OF RESULTS

Families First home visiting program is associated with increased positive parenting (ES:0.80) and reducing hostile parenting (ES:-0.53). Given the importance of early parental influences on child development these are encouraging results. (Collins, Maccoby, Steinberg, Hetherington, Bornstein, 2000) The results are also consistent with the goals of the program and the curriculum. The Growing Great Kids Curriculum (Growing Great Kids Inc.), used to structure the home visits in Families First, is activity-based and provides many suggestions on how parents can interact positively with their children. Home visitors are taught the importance of parent-child attachment and in turn encourage parents to respond sensitively to their children.

This program did not appear to improve consistent and rational parenting. It may be that the program actually does not improve these aspects of parenting or it may be that there were too few families to show program effects. These two parenting indicators included items that were appropriate parenting techniques for toddlers and older children and included following through on requests and talking with children rather than scolding or hitting. Therefore, consistent and rational parenting indicators were from families who were in the program for at least two years or who had entered the program at a later time. There were considerably fewer of these families which limited the sample size and the power to detect differences between program and comparison families.

A further investigation of families involved in consistent and rational parenting analyses showed that they were generally at lower risk than the families who had been in the program at the four month and one year evaluation. Mothers with data at later time points (those included in the consistent and rational parenting analyses) were more likely to have high school education (58.8 per cent versus 52.3 per cent) and higher household income ($28,500 versus $24,500) than mothers with data at early time points. They were less likely to be single (36.2% vs 42.9%) and less likely to be Aboriginal (21.7% vs 34.9%). Mothers with data at later time points were older (25.9 years old vs 24.6 years old), had less home visits per month (1.86 vs 2.23), stayed longer in the program (20 months vs 12 months) and had higher scores for self-acceptance (4.69 vs 4.52). However, no differences between the two groups were found for other outcomes scores (parenting, psychological well-being, social support, maternal depression, child temperament, parent-home visitor relationship and family stress checklist scores).

While the overall score for mothers' psychological well-being showed no program effects, three of the six subscales appeared to be substantially improved for mothers participating in the program: purpose iin life (ES:0.49), environmental mastery (ES:0.76), and self-acceptance (ES:0.79). Paraprofessional home visitors and public health nurses are trained to work with families on their goals and to build on families' strengths rather than to focus on their

shortcomings. Furthermore, the Growing Great Kids Curriculum devotes periodic activities to encouraging parental self-care. These approaches would help improve maternal psychological well-being. Since parental mental health has been linked to family functioning (Dickstein et al., 1998), child maltreatment (Rinehart et al. 2005; Reder & Duncan, 2000), and developmental delays (Tough et al 2008), improvements in mothers' psychological well-being may lead to increased child well-being.

Improved social support was reported by families involved in the program. These changes may be because of increased psychological well-being and because the home visitor and the public health nurses encourage families to seek social support. Since social isolation has been identified as a risk factor in children's well-being, improving family support networks is important. Intervention in improving social support networks is shown to be challenging in previous attempts (Stravynski and Greenberg, 1998); therefore, these results are particularly impressive.

Increased neighborhood cohesion also appeared to be a product of involvement in the program. Neighbourhood factors have been linked to better academic results, fewer health risk behaviors and child maltreatment (Ross & Wu, 1995, Straus & Smith, 1990, Wandersman & Nation, 1998). K. Dumont (2008) found that neighbourhood factors were important in determining how child maltreatment influences future adolescent and adult well-being. While the program appears to have positive effects on neighbourhood cohesion, none were found with neighbourhood safety. Finding positive effects for neighbourhood cohesion, but not neighbourhood safety, were expected results. Improving neighbourhood safety is beyond the scope of a home visiting program.

Maternal depression has been linked to poor family functioning (Dickstein et al., 1998). M.K. Weinberg and E.Z. Tronick (1998) found that mothers with depression talked less to their infants, showed fewer facial expressions of interest and touched the infants less. Maternal depression scores were higher at baseline for program families and continued to increase over time compared to comparison group families. Almost all of the results tested in this evaluation found that maternal depression was a strong indicator of poor results.

The home visiting program does not appear to have improved levels of depression. It should be kept in mind that the program was not designed to treat depression. These results bring to light a number of concerns about mental health issues and home visiting programs. It is not entirely clear within the Families First program model how mental health issues are identified and addressed. Home visitors are not trained or expected to act as counselors, but are expected to refer women with mental health issues to the appropriate services. Public health nurses and home visitors are concerned about the small number of mental health services for families. One of the stated goals of the Families First program is to connect families to community services and the lack of mental health services is impairing the effectiveness of the program. D. Daro and A. Crohn Donnelly (2002) write that home visiting programs are most effective when they're integrated into ongoing social programs.

No program effects were found for use of community services for personal problems (health, social and spiritual/religious), or in families' participation in voluntary organizations. The baseline data indicates that 85 per cent of program families were using community services, compared to 72 per cent of the comparison families and that both were using fewer services over time. The question asked in the evaluation focuses on help for personal problems. The question was "Besides your friends and family, did any of the following help you with your personal problems during the past 12 months?" This question may have misled the parents to consider only services for counseling and to not consider general health, social and spiritual services.

Because the concept of 'service use' is not easily interpreted, the lack of obvious differences between the two groups in increased use of services over

time can be seen as a positive – that home visitors are responding to the families' needs and reducing the need for other services. However, that fact that there was no change in rates of service use could also be interpreted as the program's failure to adequately connect families to needed services. This issue can be further explored by program staff to determine if families in their programs are receiving adequate services.

This evaluation found no evidence that Families First was decreasing the number of children with developmental delays. Anecdotally, public health nurses have observed that screening children for development delays has increased the number of referrals to specialists. This claim cannot be evaluated because the number of referrals made through Families First was not tracked. Decreasing developmental delays may not have been a realistic goal for this program, given that families remain in the program and in the evaluation for an average of 16 months. Many delays cannot be detected until the child's second birthday. (Table 3 shows that rates of developmental delay jump from 11.1 per cent at four months to 26.1 per cent at two years old for program families and from 10.8 per cent to 21.8 per cent for comparison families.)

Contrary to preliminary results found in an earlier report of the Families First Evaluation (HCM, 2005), levels of reading to children did not change as a result of participating in the program. When the children were two years old, 67.7 per cent of program families were reading daily to their children, compared to 80.0 per cent of comparison group families. (Note that rates given in these tables are unadjusted for child age, gender, temperament, parental income, education, depression, etc.) Given the many challenges that families in the program have, compared to comparison families, it may be that the reading rates would have been lower without the program. Previous research has found strong associations between reading to children and improved child well-being. (International Reading Association, National Association for the Education of Young Children, 1998; Fiscella & Kitzman, 2009). This may represent an area where more attention is required, for example, increasing the quantity and quality of literacy programs may be needed.

Participating in the program did not appear to improve: safe tap water temperature (to prevent scalds), having functioning smoke detectors and ensuring safe blind cords. Home visiting staff found that improving tap water temperature and maintaining smoke detectors proved to be difficult because many families live in rented homes. Improving these safety features may require partnerships with Manitoba Family Services and Housing's housing staff. The effect size for the improved safety of blind cords, for people in the program, was moderate but was not statistically significant. There was some evidence of inconsistent reporting with the Home Safety instrument earlier in the evaluation, which decreases our confidence in the findings related to home safety.

A high percentage of Aboriginal families participated in the Families First home visiting program – 38.4 per cent of families who participated in the evaluation were Aboriginal. The program's philosophy of working with people's strengths and being culturally sensitive may have contributed to the acceptance and attendance by Aboriginal families. Knowing that many Aboriginal families are involved in Families First reinforces the need to focus on culturally safe programming. Increased awareness of Aboriginal culture and working more closely with Aboriginal people would assist in keeping families engaged in the program (Gerlach, 2007). According to the 2006 Canada Census, Aboriginal (First Nations, Inuit, Métis) children made up close to 25 per cent of Manitoba's total child population. Families First staff and the federal government's Maternal and Child Health program staff have been working together to improve the quality of home visiting programs for all Aboriginal families in Manitoba.

Given the beneficial effects of home visiting, continued efforts should focus on ensuring program quality. D.Gomby (2005) found that high quality home visiting programs were associated with

increased well-being for families and their children. Earlier program implementation results of the Families First Program showed that approximately a quarter of families never engage in the program and the average length of stay in the program is 16 months. Increased efforts are required to improve engagement and retention in the program.

This evaluation was not designed specifically to determine if Families First reduces rates of child abuse and neglect. Improving factors that are associated with child abuse and neglect (parenting, psychological well-being, social support, neighbourhood cohesion) should reduce the risk, but no definitive conclusions can be made in this regard. Future evaluation efforts include linking this program data to administrative data at the Manitoba Centre for Health Policy (MCHP). This link will assist in determining the impact of the program on rates of children in care, protective services and health services. In the longer term, we will be able to study the impact of the home visiting program on school readiness, educational results and involvement in the justice system.

No evidence was found to suggest that delivering the program exclusively to first-time at-risk mothers would have influenced the effectiveness of the program. Some researchers have speculated that better results would be found among these first time higher families (Olds et al, 1997). No evidence was found to indicate that the variations in public health nurses' roles across regions have influenced the effectiveness of the program. It should be noted that the statistical testing used in these analyses requires considerably large differences between groups (or a very large sample sizes). Therefore, the study sample may not have been large enough to detect any differences that may exist. Public health nurses have frequently mentioned that it is difficult to give full attention to the home visiting program when they are expected to be responsible for other public health functions. Many felt strongly that these circumstances were adversely influencing children and family outcomes.

This program evaluation should be interpreted in light of certain strengths and limitations. Strengths include the quasi-experimental and longitudinal design, powerful multi-level modeling, reliable and valid measures and an opportunity to evaluate home visiting under real-world conditions. While it was not possible to randomly assign families to the program and the comparison group, all families in this evaluation were families with different levels of higher risk. The comparison group (as shown in the Baseline Characteristics Table 2) had fewer risk factors than the program families.

Some of the factors associated with being selected for the program were controlled for, but certainly not all. The fact that impressive and strong program effects were found under this design is noteworthy. Despite the higher levels of risk and under real-world delivery systems, the program families had better results on parenting, psychological well-being, social support and neighborhood indicators, compared to the comparison families. This evaluation supports the hypothesis that the program is effective for the families who participated in the evaluation. However, because the families were not randomly assigned to the program group and the comparison group, we cannot be certain that the program was entirely responsible for these improvements.

Another limitation in this evaluation is that the participation rate was 35 per cent. The results are applicable only to families who are in the evaluation. Families First screening data was used to compare program families who were in the evaluation and those who were not. The program families in the evaluation had lower levels of risk than families who were also in the program but opted not to participate in the evaluation. It is difficult to estimate which type of biases this introduces. The program effects may be stronger for families with high levels of risk, because they have more room for improvement (Gomby, 2005). On the other hand, the program effects may not be as strong for families with higher levels of risk, because multiple challenges make it difficult for them to attend programs and benefit fully from the program.

CONCLUSION

The Families First home visiting program showed strong, positive results for improved well-being in the Manitoba families who participated in this program evaluation. The magnitude of the program benefits were considerably better than those found in previous evaluations of home visiting programs. These results are encouraging, given the importance of early parental influence and maternal psychological well-being on child development and safety. In addition, the improved social support and neighbourhood cohesion found in this program help protect against other stress factors a family might be experiencing

While the program appears to have positive effects on neighbourhood cohesion, none were found with neighbourhood safety. Improving neighbourhood safety is beyond the scope of a home visiting program. The evaluation suggests improving access to literacy programs, tracking referrals for developmental delays, and examining alternative approaches to home safety. These results also bring to light concerns about mental health issues. Public health nurses and home visitors have expressed their concern over the small number of mental health services for families given its importance in family functioning and child outcomes.

In conclusion, these evaluation findings suggest that Families First home visiting program contributes to creating more secure, nurturing, stimulating environments for children where they can develop physically, emotionally and socially. Given the strong, beneficial effects of home visiting, continued efforts should be focused on ensuring program quality and improving engagement and retention of families.

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Appendix A

Measures Assessed in the Evaluation

Name of Measure	Description	Reference
Positive parenting	5 questions – example: - How often do you praise your child by saying something like "Good for you!" or "What a nice thing you did!" or "That's a good thing!"? - How often do you play sports, hobbies, or games with your child?	Parent Practices Scale by Strayhorn & Weidman (1988)
Hostile parenting	2 questions - How often do you get annoyed with your child for saying or doing something he/she is not supposed to? - How often do you tell your child that he/she is bad or not as good as others?	Same as above
Consistent parenting	How often when you discipline your child, does he/she ignore the punishment? When you give your child a command or order to do something what proportion of time do you make sure that he/she does it.	Same as above
Rational parenting	questions – example - Describe alternative ways of behaving that are - Calmly discuss problem	Same as above
Psychological well-being	18 items which are divided into 6 subscales. The questions to each subscale are listed below	Psychological Well-Being Scale by Ryff & Singer (1996)
Purpose in life	Some people wander aimlessly through life, but I am not one of them. I live one day at a time and don't really think about the future	Same as above
Positive relationships	People would describe me as a giving person , willing to share my time with others. I have not experienced many warm and trusting relationships with others.	Same as above
Environmental mastery	In general, I feel I am in charge of the situation in which I live. I am quite good at managing the many responsibilities of my daily life.	Same as above

Personal growth	•Personal Growth I think it is important to have new experiences that challenge how you think about yourself and the world. For me, life has been a continuous process of learning, changing, and growth.	Same as above
Autonomy	I am confident in my opinions, even if they are contrary to the general consensus. I judge myself by what I think is important, not by the values of what others think is important.	Same as above
Self-acceptance	When I look at the story of my life, I am pleased with how things turned out. I like most aspects of my personality.	Same as above
Neighbourhood cohesion	Brief version of the Characteristics Questionnaire and has 5 questions - There are adults in the neighbourhood that children can look up to. - People around here are willing to help their neighbours.	Barnes McGuire, 1997
Neighbourhood safety	Brief version of the Characteristics Questionnaire and has 3 questions - It is safe to walk alone in this neighbourhood after dark. - It is safe for children to play outside during the day.	Same as above
Social support	Brief version of the Social Provisions Scale and included 6 questions. - If something went wrong, no one would help me. - I have family and friends who help me feel safe, secure, and happy.	Cutrona, 1986; Curtona & Russel, 1987
Maternal depression	12-item version of the Centre for Epidemiological Studies Depression Scale – example: - I did not feel like eating: my appetite was poor - I was depressed - I felt that everything I did was an effort	Radloff, 1977
Child developmental delay	The Denver IIThe Denver II was used until 2004 and the Ages and Stages Questionnaire was used after 2004.	Denver II (Glascoe et al., 1992) Ages & Stages Questionnaire (Bricker et al.,1988)

Reading daily to child	The question asks how frequently the parent reads to the child. Do you or another adult ever read to your child, or show him/her picture or wordless baby books? If Yes, how often do you do this?	DeBaryshe, 1992 for the U.S. National Assessment of Educational Progress (NAEP), 1997
Use of community service	This item was to assess formal support services. The question was: Besides your friends and family, did any of the following help you with your personal problems during the past 12 months? Community or social service professionals? Health professionals? Religious or spiritual leaders or communities?	Statistics Canada and Human Resources Development Canada, 1995
Volunteering in community	One question to ask about volunteering. Are you involved in any local voluntary organizations? (such as school groups, church groups, community or ethnic associations)	Statistics Canada and Human Resources Development Canada, 1995
Tap water temperature	A safety checklist was completed with the family by home visitor or public health nurse. The item was - Temperature of hot water in the low risk zone (49 degrees or colder)	Healthy Child Manitoba, 1999
Smoke detectors present	- Working smoke detectors on each level	Same as above
Safe blind cords	- Blind cords out of reach and/or loop cut out	Same as above