TEN-YEAR LONGITUDINAL STUDY

OF ADOLESCENT MOTHERS

AND THEIR CHILDREN

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prepared by

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EXECUTIVE SUMMARY

Even the most high-risk of adolescent mothers can build a positive future for themselves and their children.

In 1994 the Public Health Agency of Canada invested in a parent/child development program as part of a collaborative wrap-around service for pregnant and parenting adolescents at Louise Dean Centre. The following longitudinal study contacted young mothers who had been out of the program for two to ten years to determine the longer term impacts.

The findings of this follow-up study of high-risk adolescent mothers and their children clearly demonstrate that comprehensive wrap around services during pregnancy and early parenting can have significant mediating effects on health, socio economic status and parenting. These translate into positive outcomes for the children of adolescent mothers in both the short and longer term.

Not only did the majority of high-risk LDC young mothers not show the negative profiles typically reported by researchers, in many areas they have exceeded community norms. There were no differences in outcomes for Aboriginal parents in the study, except in the area of community involvement, where the Aboriginal parents exceeded rates of involvement reported by other young families.

Over time, the young mothers in the study did better than the average young parent in educational achievement and employment.[1] In spite of their hard work and achievements, many of those young parents who are still single continue to be financially disadvantaged, a pattern that is not specific to adolescent mothers but is familiar to most lone parents across Canada.

Adolescent mothers in the study had healthy pregnancies with healthy birth weight outcomes thanks to the continuous monitoring, teaching and support of the Louise Dean Centre health programs. Early infant health continued to be supported through breastfeeding.

Given their young age when they start parenting, in many cases it takes some time for mothers to establish stable and healthy partner relationships. In more than 80% of the families, the child's biological father is not the mother's current partner. Young mothers in the study continue to have more difficulties in their general family functioning, as compared with other young parents. They are somewhat more likely to experience depression, although the difference in depression rates was not statistically significant when compared with other young mothers in the NLSCY sample.

[1] Based on NLSCY comparison group of young parents within the same age group.

EXECUTIVE SUMMARY – cont'd

In spite of these challenges, the mothers' parenting skills are well established. Young mothers in the study started reading to their babies at a younger age, and provided care and nurturing that resulted in significantly higher scores in positive parent/child interaction.

Children in the study had excellent birth outcomes, normal childhood health and injury rates, and lower rates of childhood obesity. The children had significantly higher scores in pro-social behavior and were on par with their peers for academic achievement.

Overall, this evidence of the long term stability and success of high-risk adolescent mothers and their children validates the effectiveness of comprehensive collaborative wrap-around services for pregnant and parenting adolescents.

1.0 BACKGROUND

1.1 Louise Dean Centre Partnership

Since 1970, Catholic Family Service of Calgary has worked in collaboration with the Calgary Board of Education and the Calgary Health Region to provide comprehensive programming for pregnant and parenting adolescents at Louise Dean Centre. Louise Dean Centre is a program for pregnant and parenting adolescents and their young children which offers wrap around services that include academic and educational services provided through the Calgary Board of Education, on-site pre-natal and post natal health services, provided through Calgary Health Region, and social work counselling, life skills, parenting classes and early childhood/enriched child care services provided through Catholic Family Service of Calgary.

1.2 Dr. Clara Christie Learning Centre

In 1991,Catholic Family Service was firmly convinced that providing further support to adolescent parents in the form of enriched childcare and parenting support would help to break the cycle of poverty and provide a better future for adolescent mothers and their children. In 1994, following a two-year pilot program, Health Canada's Brighter Futures Community Action Program for Children (CAPC) began funding the Dr. Clara Christie Learning Centre at Louise Dean Centre.

> *There is growing conviction that education is key to avoidance of the poverty unemployment cycle that entraps young mothers. The logistic, transportation, and coordination problems of care for children is often too much to allow continuance in educational programs. Many, in spite of good intentions, become school dropouts.*
>
> Dr. Clara Christie Learning Centre report

The Dr. Clara Christie Learning Centre (1993) program design was based on the following goals and premises:

1. To **improve the lives of children from prenatal to age six** of families where the adolescent parent is extremely under-skilled, socially isolated, under-educated relative to age, and/or living in conditions which expose her child to risk.

2. To maintain the integrity of families wherever possible – **preventing the intervention of child welfare** authorities.

3. To be able to demonstrate that at least 75% of the children who are served by these programs have **health status and developmental patterns** consistent with community norms.

1.2 Dr. Clara Christie Learning Centre – cont'd

4. To **reduce the risks** to which children of adolescent parents are exposed through
   - Teaching of **prenatal care** and **parenting skills**
   - Exceptional levels of **health monitoring, prevention and intervention**
   - Assistance with **life-skills** as related to **housing, education and employment**
   - Counseling in management of **social relationships** especially with those who have a direct impact on the child (e.g. father, extended family)

5. To provide care for children of high-risk parents in an **environment which compensates for deficits in parenting** while also addressing these deficits with training and encouragement.

6. To offer coordination, counseling and advocacy to support **transitions** and facilitate **access to programs or services** of other agencies that can help meet the needs of these children.

Today the Dr. Clara Christie Learning Centre forms a key component of the Louise Dean Centre (LDC) collaborative service model.

The following charts illustrate the range of services offered to pregnant and parenting adolescents and their children through collaborative partnerships at Louise Dean Centre.

1.3 Louise Dean Centre Collaborative Service Providers and Programs

Catholic Family Service of Calgary (CFS)	Calgary Board of Education (CBE)	Calgary Health Region (CHR)
Community Support Services **School Based Counselling -** Personal, couple and family counselling and support, parenting classes, various skill building groups; for youth under 20 at LDC. **Community Outreach -** Home visitation model offering counselling support to pregnant and parenting youth ages 16 to 24 and their families. Parent/child focused groups in the community. Community school counselling support upon request. **LifeSkills -** offered within curriculum at LDC to help improve skills of young women in areas of communication, problem solving and fostering of self-esteem. Variety of modified life skills groups offered with community partners. **Aboriginal Circle -** In collaboration with CBE Aboriginal Liaison, aboriginal students at LDC are offered a group setting in which to share a meal; meet with elders; take part in aboriginal rituals and develop a sense of community. **Peer Support/Leadership Opportunities** eight week group program where young moms reflect on their experiences from a narrative perspective; develop their story into a presentation, learn public speaking skills, bring their experience to junior and senior high school classes in the community.	**Academic Programs:** 14.5 teachers provide a full academic junior and senior high school program with diverse range of learning experiences and all core courses for an Alberta high school diploma. Teachers work collaboratively with CFS social workers in the life skills and **parenting classes**. A teacher also works collaboratively with the Calgary Health Region nurse to provide prenatal classes and supports. **Learning Strategists & Library:** reading & writing coach **Resource Teacher:** Assists students to meet with **CBE psychologists** to assess their unique learning needs; to develop appropriate individual learning plans and to support student's academic success. Provides follow up information to teachers, TA and social workers for inclusion in work with students. **Career Planning Transition:** Prior to graduation year, students attend a transition group that assists in transition to post secondary or training programs. Attention to deadlines for application to various colleges , training programs and universities of their choice. Financial support for application fees. **Nutrition:** free breakfast program and lunch at reduced cost (.85 cook)	**Public Health Nurse (PHN):** 1 full time & 1 casual PHN offer assessment and intervention for pregnant and parenting student health concerns and infant health needs on an on-going basis at LDC. **Pre-natal Classes:** PHN co- teaches childbirth education and prenatal parenting preparation as a course providing credits as part of the CBE curriculum. **Lactation Consultant:** the PHN is a certified lactation consultant. Prepares ALL pregnant students to solely breastfeed, support and protects breastfeeding efforts postnatally in collaboration with CHR's Postpartum Services. **Physician Support:** Physician support on site has been loosely available for several years. Since 2007, a physician offers clinical assessment and treatment one day a week in the capacity of a private family medicine "outreach" clinic. **Dental:** CHR dental hygienist available on request to provide education, screening and treatment referral and consultation. **Nutrition Support:** provided by on-site PHN, referral to CHR Dietician and/or Healthy Babies Network Dietician

1.3 Louise Dean Centre Collaborative Service Providers and Programs-cont'd

Catholic Family Service of Calgary (CFS)	Calgary Board of Education (CBE)	Calgary Health Region (CHR)
Early Childhood Services **Dr. Clara Christie Learning Centre -** on site licensed child care facility for the benefit of high risk mothers at LDC. For children age 6 weeks to 35 months. Mother/child dyads are the focus of enhanced services including child development assessment and infant mental health interventions. Limited to 40 spaces and fees apply **Home Start -** Home Visitation model to assist young parents age 16 to 24 in the community with parenting skills, child development assessment, infant mental health interventions, while establishing family routines to foster child development and family harmony. **CACY Project -** offers on-site childcare and Home Start services to young parents accessing an alternative high school model at Calgary Achievement Centre for Youth. **Cuddlers -** Volunteers at LDC & CACY cuddle, comfort and play with the young infants & toddlers in our childcare facilities. **Teen Parent Friend** provides trained volunteers to provide friendship, emotional support and mentoring for young mothers in the community. **Baby F&ST**: 8-week program offered twice a year in partnership between CFS/CBE at LDC. Research based family support, prevention program for infants/toddlers is a multi-family group process which builds relationships of young new parents with each other, with their baby, with one supportive adult in their lives and with child serving community professionals.	**Learner Income Support**: for parenting students age 16+ and pregnant students age 18+ when they meet criteria for school attendance and success. Representatives of this income support program meet monthly with our students on site. Graduating students receive post secondary scholarship information as well as student financing options. **Discovering Your Opportunities:** program is a collaboration of CFS, CBE and the City of Calgary Youth Employment Centre. This summer school program offers critical career planning, the development and maintenance of employable skills and work experience for 12 students a year.	**Best Beginnings** is a CHR resource available to our pregnant students for prenatal social support groups, as well as access to CPNP nutritional supports if required. **Coordinated Community Response for Healthy Babies**: A joint CFS/CHR Canada Prenatal Nutrition Project (CPNP), since 2006 Healthy Babies Network team (Coordinator, Social Worker and Nutritionist) facilitates pre and post natal client access to services such as Provisions (nutritional supplements, food coupons, bus tickets); Education (nutritional education and selected psychosocial workshop topics); Referral to community services; Assessment by registered dietician and/or social worker; and Consultation (agency, professional and individual).

2.0 LITERATURE REVIEW

Researchers agree that adolescent pregnancy and parenting places the mother and child at higher risk for poor outcomes. A number of important longitudinal research studies have identified the complex mix of socio-economic, contextual and personal factors that contribute to those poor outcomes.

2.1 Determinants of Health

Social determinants of health are the best predictors of individual and population health, structure lifestyle choices, and interact with each other to provide health[2].

Table 1: Determinants of Health[3]

KEY DETERMINANT	WHAT DOES IT MEAN?
Income	As income goes up, health gets better.
Social Support	Caring relationships seem to act as a buffer against health problems.
Social Environment	The beliefs and actions of people around us in society at large, or in our social circle, influence our health practices.
Education	As years of schooling or level of education goes up, health improves.
Employment	Unemployment and stressful work are linked to poor health.
Health Practices and Coping Skills	Healthy choices and lifestyles, as well as knowledge, intentions and behaviour can improve health.
Healthy Child Development	Prenatal and early childhood experience has a powerful effect on birth weight, subsequent health, well-being, coping skills and competence.
Health Services	Health services designed to maintain and promote health, to prevent disease and to restore health contribute to population health.
Physical Environment	Many factors in the natural and human-built environment influence health. Example, on a societal level: Public policy should ensure an adequate supply of safe, affordable housing.
Culture	Certain cultural groups face additional health risks (e.g., First Nations, recent immigrants, and visible minorities).
Biology and Genetic Endowment	People are genetically prone to certain diseases or health problems.
Gender	The array of roles, personality traits, behaviours, values, power, and influence society ascribes to both sexes on a differential basis.

[2] Raphael D. editor (2004). Social Determinants of Health. Canadian Perspectives. Canadian Scholar's Inc Press. Toronto.
[3] Public Health Agency of Canada. (2006). Canada Prenatal Nutrition Program – Individual Program Questionnaire Guide. Determinants of Health.

2.2 Socio Economic Status and Self Sufficiency

In 1987, Furstenberg published the results of a 17 year longitudinal research study that tracked teenage mothers. The findings showed that as mothers managed to improve their economic circumstances, the children fared better as well. The teen mothers with the strongest commitments to school – those who had never failed a grade and those who continued with their classes during their pregnancies – were the most likely to be self-supporting later in life. One quarter of these women reached the middle-income brackets. The children of teen mothers who dropped out of school, remained on welfare, did not marry, or had additional children during adolescence were the least likely to have positive outcomes.[4]

Outcomes for the mother have a direct impact on outcomes for the child. The research identified three significant changes in an adolescent mother's life that positively affected her child's academic success: terminating welfare status, contracting a stable marriage and advancing her own education.

Other longitudinal studies conducted by an interdisciplinary team of researchers from Johns Hopkins, Columbia and Brigham Young Universities confirmed Fursentberg's findings. The research found that children of adolescent mothers had poorer outcomes including greater likelihood of dropping out of school, receiving welfare, and becoming adolescent parents themselves when compared with the children of older mothers. However, the researchers concluded that adolescent mothers can significantly improve the prospects of their families if they finish high school.[5]

Research strongly supports improving educational opportunities for teen parents as a principal means of improving outcomes for their children. In addition to equipping the teens with the knowledge and skills they will need in the work force, these programs can help teens become more responsive parents by offering classes in child development and parenting education. These programs can also provide crucial support and linkages to other services that young parents and their children need, including quality child care and health care.[6]

[4] Furstenberg, F., Brooks-Gunn, J., Morgan S. (1987). Teenaged Mothers In Later Life. Cambridge University Press.
[5] J. Hardy, S. Shapiro, N. Astone, T. Miller, J. Brooks-Gunn, and S. Hilton, "Adolescent Childbearing Revisited: The Age of Inner-City Mothers at Delivery Is a Determinant of Their Children's Self-sufficiency at Age 27 to 33," Pediatrics, November 1997.
[6] Based on data from the National Education Longitudinal Study, Child Trends, Facts at a Glance, October 1997.

2.3 Other Factors That Place Young Mothers At Risk

While adolescent childbearing is known to present challenges for mothers and their children, not all adolescent mothers experience long-term negative effects. In another 20 year longitudinal study, Jaffe et al (2001) confirmed the socio-economic risks for children of adolescent mothers but looked more closely at why children are at higher risk for adverse outcomes. The research considered both social-selection (personal characteristics) and social-influence (Socio Economic Status - SES). Findings showed that family circumstances (SES) accounted for 21% of the negative effects of teen childbearing on children, while maternal characteristics such as lower cognitive ability and antisocial behavior (e.g. conduct disorder) accounted for 18% of the effect.[7]

Research suggests that risks for children of adolescent mothers are elevated partly because their mothers are disadvantaged to begin with and partly because their mothers tend to attain less schooling, to remain single or have unstable marriages and to have more children than average.[8]

2.4 Adjustment to Parenting Role

With the birth of a child, an adolescent parent must negotiate the transition to parenthood, which brings new roles, responsibilities and a dramatically changed lifestyle.[9] This transition involves three critical issues that are central to the adjustment of the new mother.[10] These issues include:

- whether the adolescent mother will be able to continue to attend school and complete her educational plan,
- how well the adolescent mother is able to care for her infant and develop a strong, positive parent-child relationship and
- the role that the family and community will play in providing support for the young mother and child during this transitional process.

A study focusing on adolescent mothers parenting practices found that poor infant-mother attachment, and maternal depression are each associated with increased risk for behavior problems among children at the pre-school age.[11] Other researchers have found that maternal self-esteem and depression in adolescent mothers are associated with the parenting process and the development and behavioral outcomes of children.[12]

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[7] Jaffee, S., Caspi, A., Moffitt, T., Belsky, J. Silva, P. (2001). Why are children born to teen mothers at risk for adverse outcomes in young adulthood? Results from a 20-year longitudinal study. *Development and Psychopathology*. Vol. 13 377-397.
[8] Hofferth, S. Reid. L. (2002).Early Childbearing and Children's Achievement and Behavior Over Time. Perspectives on Sexual and Reproductive Health, 34(1), 41-49.
[9] Whitman, T. L. Borkowski, J. G. Keogh, D. A. Weed, K. (2001). Interactive lives: Adolescent Mothers and Their Children. Mahwah, NF. Lawrence Erlbaum Associate Publishers.
[10] Sadler, L.S. Swartz, M. K. Ryan-Krause, P. (2003). Supporting Adolescent Mothers and Their Children Through A High School-based Child Care Center and Parent Support Program. Journal of Pediatric Health Care. 109-117.
[11] Tait, L. Osofsky, J. Hann, D. Culp, A. (1994) Predicting Behavior Problems and Social Competence in Children of Adolescent
[12]Leadbeater, B. Bishop, S. & Raver, C. (1996). Quality of Mother-Toddler Interactions, maternal depressive symptoms, and behavioral problems in pre-schoolers of adolescent mothers. Developmental Psychology. 32, 280-288.

2.5 Contextual Factors

While children of adolescent mothers are more likely to experience behavior problems in their teen years, this may well be due to "contextual disadvantages" that stem from early parenting.[13] For example, if early parenting ties women to disadvantaged neighborhoods due to incomplete education, lower income, and limited breadth of social networks and if neighborhoods do affect child outcomes, then negative child behaviors may result.

Contextual factors associated with better parenting outcomes include social support (usually provided by the maternal family and sometimes the baby's father), postponing further child bearing at least 2 years, infants with an "easy" temperament and completing high school.[14] [15]

2.6 The Role of Child Care

One of the barriers that may interfere with the adolescent mother's ability to continue her educational progress is lack of access to affordable and reliable quality childcare.

Access to quality childcare can have a positive effect on both children and mothers. Researchers found that not only did children who participated in a preschool program demonstrate "positive and systematic cognitive and academic achievement differences", but also that high quality, consistently available preschool was associated with greater maternal educational advancement and higher levels of employment, particularly for teenage mothers.[16]

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[13] Levine, J. (2001). Academic and Behavioral Outcomes Among the Children of Young Mothers. Journal of Marriage and Family 63: 355-369.
[14] Chase-Lansdale, P. Brooks-Gunn, J. & Paikoff, R. (1991). Research and Programs for Adolescent Mothers: Missing Links and Future Promises. Family Relations. Vol 40 (4): 396-403.
[15] Roye, C. F. Balk, F. J. (1996). The Relationship of Partner Support to Outcomes for Teen Mothers and Their Children. Journal of Adolescent Health. Vol. 19 (2): 86-93.
[16] Ramey. C., Campbell, F., Burchinal, M., Skinner, M., Gardener, D., Ramey, S. (2000). Persistent Effects of Early Childhood Education on High-Risk Children and Their Mothers. *Applied Developmental Science*. Vol. 4, No. 1, 2-14.
[16] Sadler, L.S. Swartz, M. K. Ryan-Krause, P. (2003). Supporting Adolescent Mothers and Their Children Through A High School-based Child Care Center and Parent Support Program. Journal of Pediatric Health Care. 109-117.

2.6 The Role of Child Care – cont'd

"In the case of a particularly high-risk group of urban socio-economically disadvantaged adolescent parents, who may not have access to consistent family support and who are trying to both complete their own education and adolescent developmental tasks and raise their children in a safe and nurturing environment, school-based child care centers bring together the necessary components for the success of these young families. For the young mothers involved in this program, parental competence was positive, the quality of mother-child teaching interactions was significantly greater than those of a comparison group and the children's development was appropriate for their age". [17]

2.7 Research Conclusions

The researchers conclude that it is not enough to simply delay the onset of pregnancy. Interventions that target young mothers' prenatal health behavior, child-care practices, family planning, self-confidence, educational achievement and workforce participation can help to redirect her life-course trajectory and improve outcomes for her children.

[17] Sadler, L.S. Swartz, M. K. Ryan-Krause, P. (2003). Supporting Adolescent Mothers and Their Children Through A High School-based Child Care Center and Parent Support Program. Journal of Pediatric Health Care. 109-117.

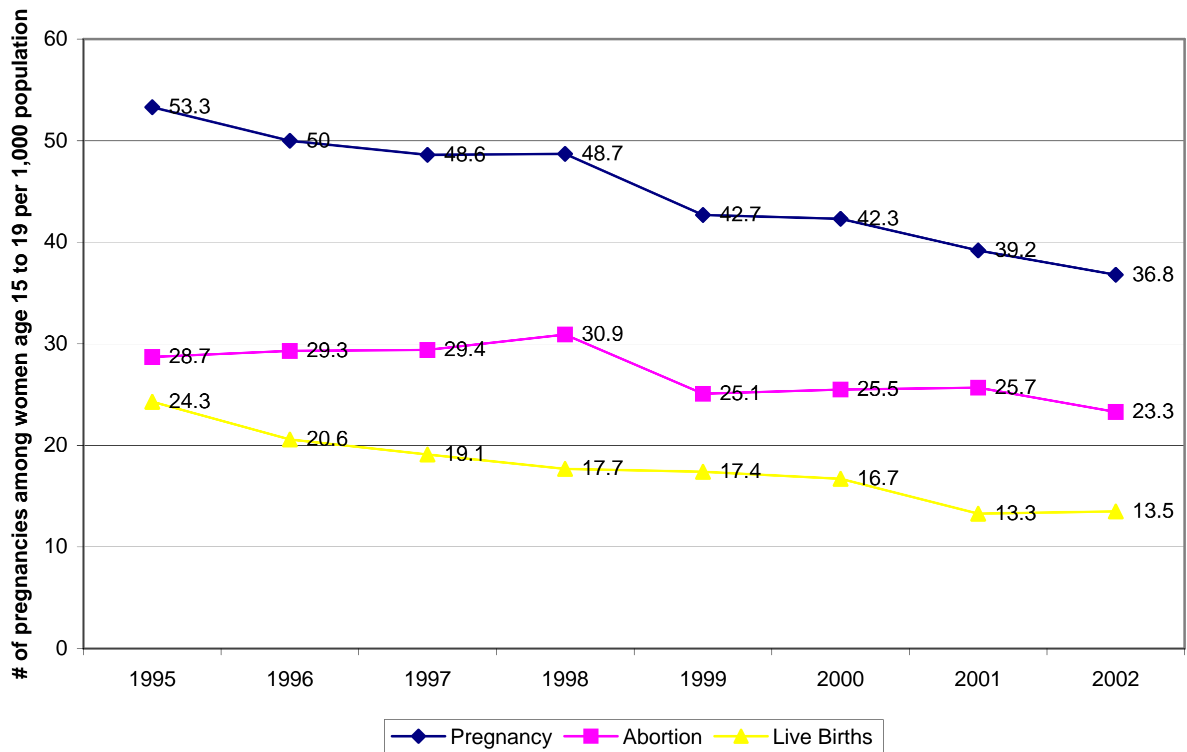
3.0 SOCIAL POLICY AND PROGRAM RESPONSE

Given the research concerns about the disadvantages associated with adolescent parenting, there have been two consistent social policy responses:

1) to work toward decreasing the number of teen pregnancies
2) to provide supportive interventions for pregnant and parenting adolescents and their children

In the first instance, there is a positive trend toward declining rates of teen pregnancy. From 1995 to 2002, the teen pregnancy rate for teens aged 15 to 19 in the Calgary Region steadily declined from 53.3 to 36.8. Both live birth rates and abortion rates also declined significantly during this period. In the year 2002, the teen birth rate was 13.5 compared to 24.3 in 1995, and the teen abortion rate was 23.3 compared to 30.9 in 1998. The factors contributing to this decline have not yet been clearly identified.[18]

Figure 1



[18] Calgary Health Region. (2007). The FACTS on Teen Pregnancy, Sexually Transmitted Infections (STI), HIV & AIDS. Retrieved March 2008 www.calgaryhealthregion.ca/hecomm/sexual/pdf/Teen%20Facts%202007.pdf

Table 2[19]
Adolescent Pregnancy, Birth and Abortion Rate Comparisons: Calgary (2002), Alberta (2005) and Canada (2003)

	Calgary	Alberta	Canada
Pregnancy Rate	36.8	37.6	32.1
Birth Rate	13.5	18.4	14.4
Abortion Rate (not including spontaneous abortion)	23.2	15.9	17.1

For those young women in Calgary who do become pregnant, Louise Dean Centre offers comprehensive wrap around services to adolescent mothers and their children. These services include high school education, pre and post natal health services, counselling and social support, life skills, enhanced child care and parenting classes.

Studies suggest school based comprehensive programs with dual generational models that include essential services for both young parent and the child simultaneously offer the most promising outcomes. Sadler et al (2007) describes the range of necessary service components as "…providing social support, a source of accomplishment for mothers (which may help buffer depression), safe childcare, a learning environment for children, modeling of positive mothering skills, high school dropout prevention, and skilled and caring adult mentors, who help young mothers stay organized about their own health care and needs as well as those of their child."[20]

Although pregnancy and birth rates have been declining over the past ten years, the experience at Louise Dean Centre has been a corresponding increase in the level of risk presented by participants. During the early years of the Learning Centre program, young women would present with issues in one of the three partner domains (i.e. health, education, social functioning/lifestyle). But since 2000, young women are presenting with a more complex mix of challenges in all three domains. For example, in 2006 approximately 85% of students at Louise Dean Centre met the Calgary Board of Education criteria for "coding" (i.e. serious learning or behavior challenges). And health partners report that students are presenting with more complicated health problems. This has made the work of service providers more challenging.

[19] Calgary Health Region. (2007). The FACTS on Teen Pregnancy, Sexually Transmitted Infections (STI), HIV & AIDS. Retrieved March 2008 www.calgaryhealthregion.ca/hecomm/sexual/pdf/Teen%20Facts%202007.pdf
[20] Sadler, LS, Swartz, MK, Ryan-Krause, P, Seitz, V., Meadows-Oliver, M., Grey, M., Clemmens, DA., (March 2007). Promising Outcomes in Teen Mothers Enrolled in a School Based Parent Support Program and Child Care Centre. *Journal of School Health*, Vol 77, No3

4.0 THE STUDY

Ongoing evaluation at Louise Dean Centre consistently indicates positive short-term impacts resulting from interventions experienced by participants. Outcomes include healthy birth weights, healthy child development, gains in education, mother and infant health, improved parenting skills, and reduced environmental risk factors (e.g. improved housing, income, social support, life style).

The **Ten Year Follow Up Study of Adolescent Mothers and Their Children** will explore the extent to which these short term program results have carried forward and influenced longer term outcomes for the adolescent mothers and their children.

The aim of the study is to determine whether:

1. Adolescent mothers who participated at LDC have improved socio-economic circumstances in the long term (i.e. better education, employment, income).
2. Children who have the benefit of a healthy birth-weight and positive parenting demonstrate healthy child development with few serious childhood injuries, and with social skills, behaviors and academic achievements on par with their peers.
3. Mothers are able to parent with confidence in a healthy stable family and community environment.

4.1 Research Questions

1. Did LDC interventions have long term positive impacts on adolescent mothers and their children in the following areas:
    - Improved family socio-economic status (education, employment, income)
    - Family stability (marital status, non-violence, non abusive, positive family functioning).
    - Understanding the value of education, positive education aspirations for self and children, importance of literacy for self and children.
    - Effects of mother's health on ability to parent (i.e. general health, mental health, ability to manage historical health and/or social emotional issues).
    - Mother's lifestyle (i.e. smoking, drinking, drug use) as potential for impact on personal and child's well-being.
    - Ability to connect with other community services, health services, resources, supports to further their own or family well-being.
    - Family context (housing, neighbourhood, community engagement).
    - Parenting.
    - Pregnancy history related to potential impact on child health and well-being.
    - Child health (birth weight, general health, safety from childhood injuries).
    - Child development (early childhood development, behavior, literacy, education).

The study takes a broad "determinants of health" approach in identifying child, parent and family well-being.

4.2 Study Participant Selection

Participants for the study were selected from adolescent mothers at LDC between 1995 and 2004 who accessed the PHAC funded Dr. Clara Christie Parent/Child Learning Centre for at least three months. The sample was representative of the user population, with approximately 8 participants selected from each year and attention to appropriate representation of Aboriginal and immigrant families. The study attempted to sample approximately 8 mother/child dyads from each year over the targeted ten-year period for a total sample size of 80 mothers and 80+ children (in a few cases mother's have had more than one child in the Learning Centre program).

Although approximately 180 pregnant and parenting adolescents participate in LDC programs in any given year, the Learning Centre program typically serves about 60 to 90 of the highest risk families (child and mother) per year. Due to limited space, only those adolescent parents screened as "higher risk" are admitted to the Learning Centre program. Higher risk is defined as those families with a combination of risk factors that may include very young maternal age (age 14 to 16), physical or mental health issues, lack of social support, children at risk for abuse or neglect. Therefore the families included in this study are the most disadvantaged and at risk group of adolescent parents served at LDC.

4.3 Research Design

Data on young mothers (aged 30 or less) from the most recent National Longitudinal Study on Children and Youth (NLSCY) Cycle 6 (2004/2005) was used as a comparative baseline for adult survey questions. For children, data from the NLSCY Cycle 3 (1998/1999) was used as a comparative baseline because the Cycle 6 data set did not include children age six to nine.

There are two distinct cohorts within the study: those who have been out of the program for 4 years or more with school-aged children age 6 to 12; and those who have been out of the program for 2 to 4 years with pre-school children who are now age 3 to 5.

4.4 Project Structure

An Advisory Committee was established to guide the project design and implementation, review findings, assist with interpretation of results and critique the final report. The Advisory Committee was comprised of representatives from Public Health Agency of Canada; Catholic Family Service of Calgary; Calgary Board of Education; Calgary Health Region; and University of Calgary.

5.0 STUDY METHODS

The Advisory Committee was established and consulted prior to survey development. Partners from education, health, social work and childcare provided excellent guidance during the survey development phase.

5.1 Survey Development

Two surveys (adult and child) were developed and purposely aligned with relevant questions and scales on the NLSCY Cycle 6. The adult (mother's) survey consists of 131 questions, including 5 scales (depression, social support, self esteem, family functioning, parenting). The children's survey consists of 71 questions and 3 scales (behavior, literacy, child development). The child survey is completed only for the child(ren) who participated in the Learning Centre program, and does not include children the young mothers may have had since leaving LDC.

The surveys were reviewed first by the Advisory Committee, then by several adolescent participants who are part of the Louise Dean Centre Peer Support Program. Following this feedback and edits, the surveys were piloted with several young women currently engaged in the program to assess timing, question sequence and ability to answer questions. Final edits were completed and the survey was launched in March 2007.

5.2 Sampling Process

Case files were pulled for each year of the study. Each file was assessed for basic eligibility (i.e. minimum three months participation in the Learning Centre program). Within this set of eligible subjects, the research assistant began calling old phone numbers on the file in an attempt to reach the participants. If one participant could be located they were often able to assist with location of additional participants (snowball sample). To spread the word about the study and increase participation, a Facebook site was set up and a number of participants from the sample group were located in this way. In some cases, a young mother would hear about the study and call LDC to offer their participation. Only those individuals who fit the sampling criteria were allowed to participate in the survey.

5.3 Interviewing

Survey data was collected through a face-to-face interview with the mother, taking about one to one and half hours. Both mother and child information was provided by the mother. Two levels of consent were used. The first consent process occurred at initial phone contact. The research assistant explained the purpose of the study and gained initial verbal consent from the mother to conduct the survey. At the face-to-face interview meeting, a formal consent form was signed by the mother prior to conducting the interview. Interviews were usually conducted at the mother's home. Participants were offered a $25 honorarium. Most young mothers who were contacted were very eager to take part in the study, to share their story and "give back". Of the sample group contacted there were only four refusals.

6.0 PARTICIPANT PROFILES

A total of 71 interviews were conducted over the period March to December 2007, providing data on 71 mothers and 73 children.

6.1 Current Age of Study Participants

Study participants ranged in age from 17 to 31. Children included in the study ranged in age from 2 to 13, with 15 children in the pre-school age group and 58 children in the school-age group.

Table 3: Age of Mother

Age	Number	%
17	1	1.4%
20	2	2.8%
21	4	5.6%
22	6	8.5%
23	4	5.6%
24	12	17%
25	10	14%
26	10	14%
27	6	8.5%
28	7	9.9%
29	2	2.8%
30	3	4.3%
31	4	5.6%
Total	71	100%

Table 4: Age of Child

Age	Number	%
2	2	2.7%
3	2	2.8%
4	7	9.6%
5	4	5.5%
6	12	16.4%
7	7	9.6%
8	7	9.6%
9	7	9.6%
10	7	9.6%
11	11	15%
12	6	8.2%
13	1	1.4%
Total	73	100%

6.2 Ethnicity

The study sample provided a good reflection of the general population of young mothers using the Learning Centre program at LDC.

Aboriginal representation in the sample is generally consistent with rates of Aboriginal participation in the program during the period included in the study. Rates of Aboriginal participation have risen from approximately 10% in 1994 to 25% in 2004 due to the closure of the Plains Indian Cultural School (PICS) in 2001.

The representation of Aboriginal parents in the study sample is almost double that of the NLSCY comparative sample.

The study sample also included an appropriate representation (5.7%) of ethnically diverse families.

Table 5: Ethnicity

	LDC Survey Participants		NLSCY Survey PMK <=30	
	N	%	N	%
Caucasian	55	77.5%	28	87.5%
Black	1	1.4%	1	3.1%
Native/Aboriginal	12	16.9%	3	9.4%
Other	3	4.2%	0	0%
Total	71	100%	32	100%

Throughout this study, there were no significant differences found between Aboriginal and non-Aboriginal LDC parents and children who participated in the study.

6.3 Participant Baseline Profile – Presenting Issues

When pregnant adolescents enter the Louise Dean Centre program, most have been out of school for some period of time. These young women have complex lives and typically enter the program with multiple risk factors.

Table 6: Months Out of School Before LDC

# of Months	# of LDC Participants	% of Participants
0	25	35.7%
1	6	8.6%
2	6	8.6%
3	3	4.3%
5	3	4.3%
6	10	14.3%
7-11	7	10%
12-13	6	8.5%
18	4	5.7%
Total	70	100%

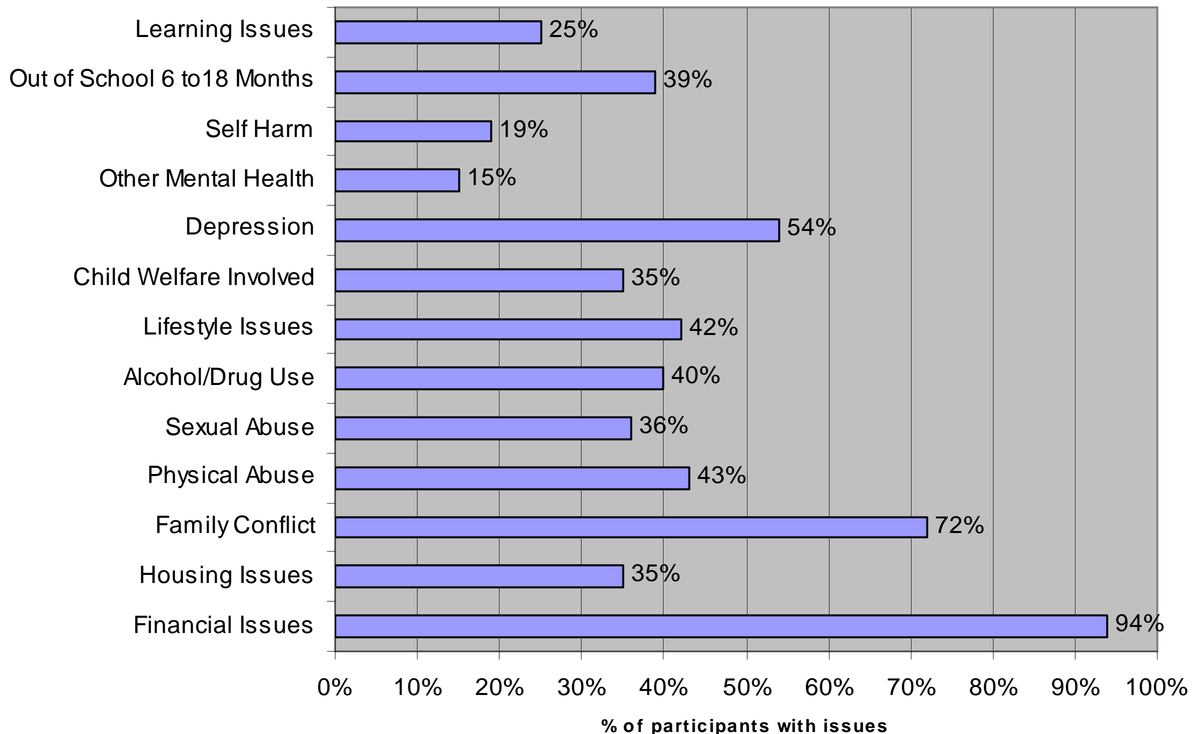
The baseline profile information was collected from intake assessments on file at Louise Dean Centre. Assessments are completed by social work counselors in a face-to-face interview with applicants at admission to the program.

All of the young women in this study were identified as high risk for basic socio-economic factors such as lack of financial support and housing. In addition to these basic socio-economic risks, **65%** of the young women in this study had **clusters of four to twelve risk factors** from among the following areas: partner or family conflict; emotional, physical, or sexual abuse; drug, alcohol, and lifestyle issues; behavior, self harm, depression and/or mental health issues; and school adjustment/learning issues.

Research has demonstrated that as the number of cumulative risk factors increase, resilience can be negatively impacted. “The effects of single environmental challenges become very large when accumulated into multiple risk scores even affecting the development of offspring in the next generation.”[21]

[21] Sameroff, A. Rosenblum, K. (2006). Psychosocial Constraints on the Development of Resilience. Center for Human Growth and Development, University of Michigan, Ann Arbor Michigan, USA. Retrieved March 2008 at www.annalsnyas.org/cgi/content/abstract/1094/1/116

Figure 2 Profile of Adolescent Mothers at Admission
N = 71



Due to their complex psychosocial risk profiles, young women coming into the Louise Dean Centre need wrap-around targeted interventions to help them get back on track. Many young women pointed out why their general high school program could not provide the support they needed.

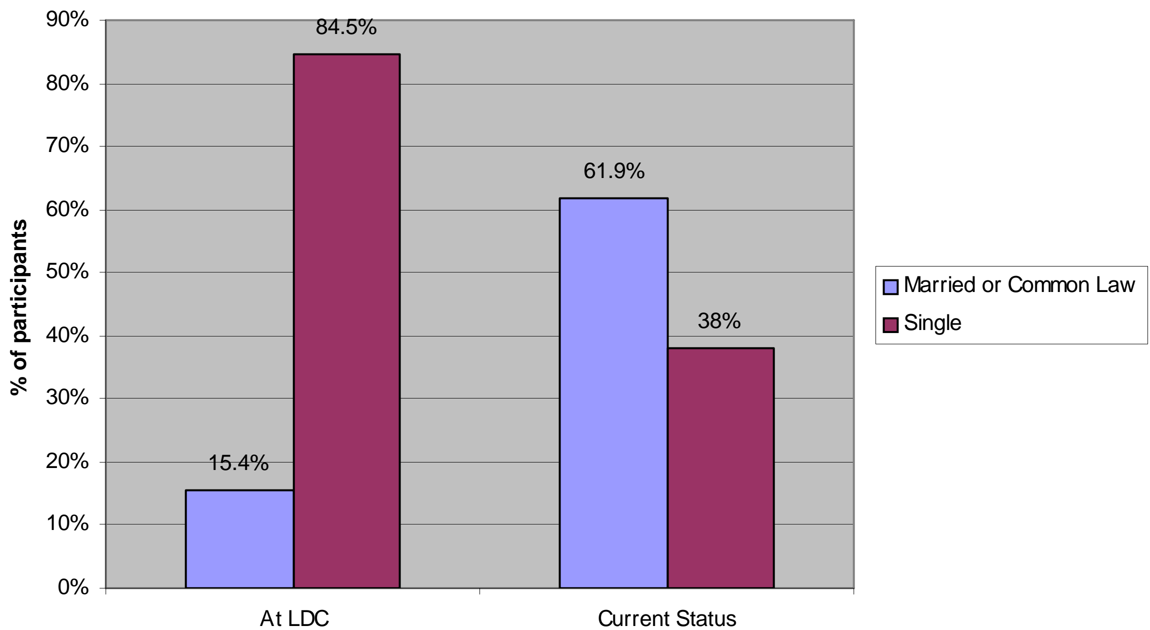
> *My high school kicked me out when I told them I was pregnant.*
> *Called it a distraction.*
>
> *My high school said that I was too high a risk, high maintenance to stay there.*
>
> *I was new to Calgary. Didn't want to go to a "normal high school" pregnant and alone.*
>
> *They made it clear at my other high school that they didn't want me there.*
>
> *It (Louise Dean Centre) was suggested by my probation office at my previous high school "for my own safety".*
>
> *I had a hard time going to my regular school. I didn't feel welcome.*

7.0 OUTCOMES FOR YOUNG MOTHERS

7.1 Marital Status Before and After LDC

While the majority (84.5%) of participants at LDC were single when they started the program, follow-up shows that 73% of the previously single mothers now have a live-in common-law or marriage partner. In 14% of the LDC families, the child's biological father is the current partner.

Figure 3



7.1 Marital Status Before and After LDC – cont'd

Although more than half of the previously single mothers are now in a stable partner relationship, young mothers in the LDC sample were still more than twice as likely to be single parents when compared with NLSCY mothers.

Table 7:

Current Marital Status Comparison

	LDC Survey Participants		NLSCY Survey PMK <=30	
	N	**%**	**N**	**%**
Married	17	24.3%	16	50%
Common-law	26	37.1%	8	25%
Separated/Divorced	0	0	3	9.4%
Single Never Married	27	38.6%	5	15.6%
Total	71	100%	32	100%

Being single creates additional stress and burdens on the parent. A single parent is the sole wage earner for their family resulting in lower total household income. Lone parents have less flexibility in their childcare options and less opportunity for assistance or respite from a partner. These additional stressors can increase risk for depression and anxiety.

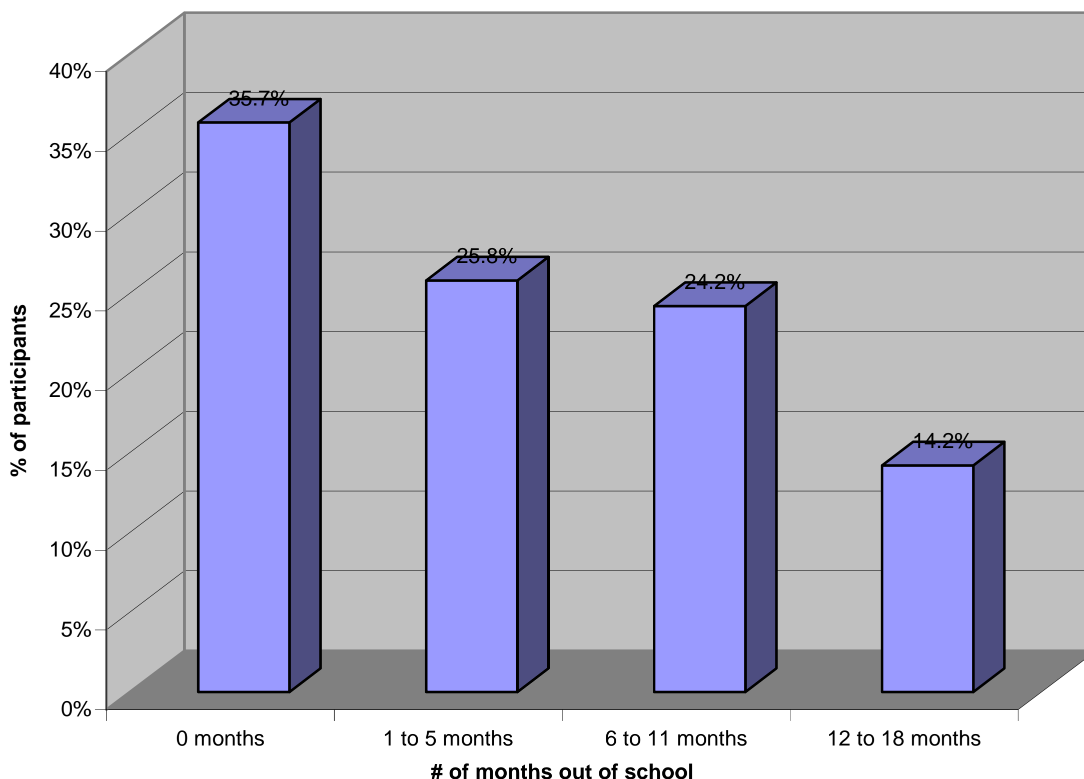
However, for the young mothers at LDC, parenting alone may also represent a positive lifestyle choice in cases where the partner relationships have been difficult. Family Functioning scores were significantly lower for LDC mothers than they were for NLSCY mothers in the same age group. Eighty percent (80%) of LDC mothers in the study reported changing partners since the birth of their first child.

7.2 EDUCATION

7.2.1 Education Starting Point

Approximately 64% of pregnant adolescents applying to LDC have experienced some interruption in their education and almost 40% have had a significant interruption of 6 months or more. An early unplanned pregnancy can increase the likelihood of dropping out of school, but it can also act as a "wake-up call" to adolescents who have been engaging in high risk lifestyles. [22] Louise Dean Centre provides an opportunity for pregnant adolescents to re-engage with school and continue their education.

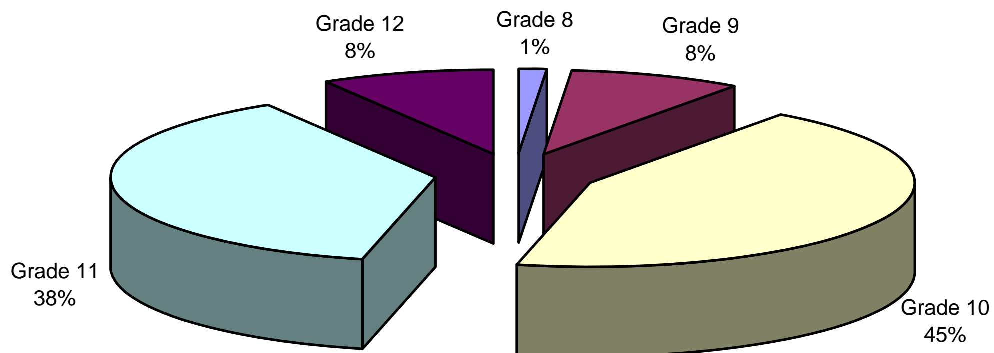
Figure 4



[22] Brindis, C., & Philliber, S. (2003). Improving services for pregnant and parenting teens. *Prevention Researcher*, 10(3): 9-13

Figure 5

Grade Level at Admission to Louise Dean Centre
N = 71



7.2.2 Education Achievement

Recent results from the Survey on Labour and Income Dynamics suggest that "teenage childbearing is related to lower educational achievements, which may in turn lead to longer-term effects on labour force participation and rates of living in low income. However, teenage mothers and adult mothers with similar levels of education also had similar labour market participations and rates of living in low income—suggesting that education is more important in determining labour force participation and income in the long run."[23]

Special programming at Louise Dean Centre helps young women who were previously disconnected from their education, to re-engage. High-risk young women may experience success in their education for the first time thanks to low class sizes, high teacher ratio, individualized programs, mentoring attention, and the school's ability to identify specific learning issues and design targeted learning strategies. Teachers are persistent in their efforts to engage the young women.

In spite of the educational interruptions and the added complications of early pregnancy and parenting, the young mothers in the LDC study had a **high school graduation rate of 91.4%** compared with other young parents in the NLSCY who had a high school graduation rate of 78.1%. Young mothers in the LDC sample were almost four times more likely to have some post-secondary education, and had slightly higher rates of college/university completion.

Table 8:

Highest Level of Education Completed

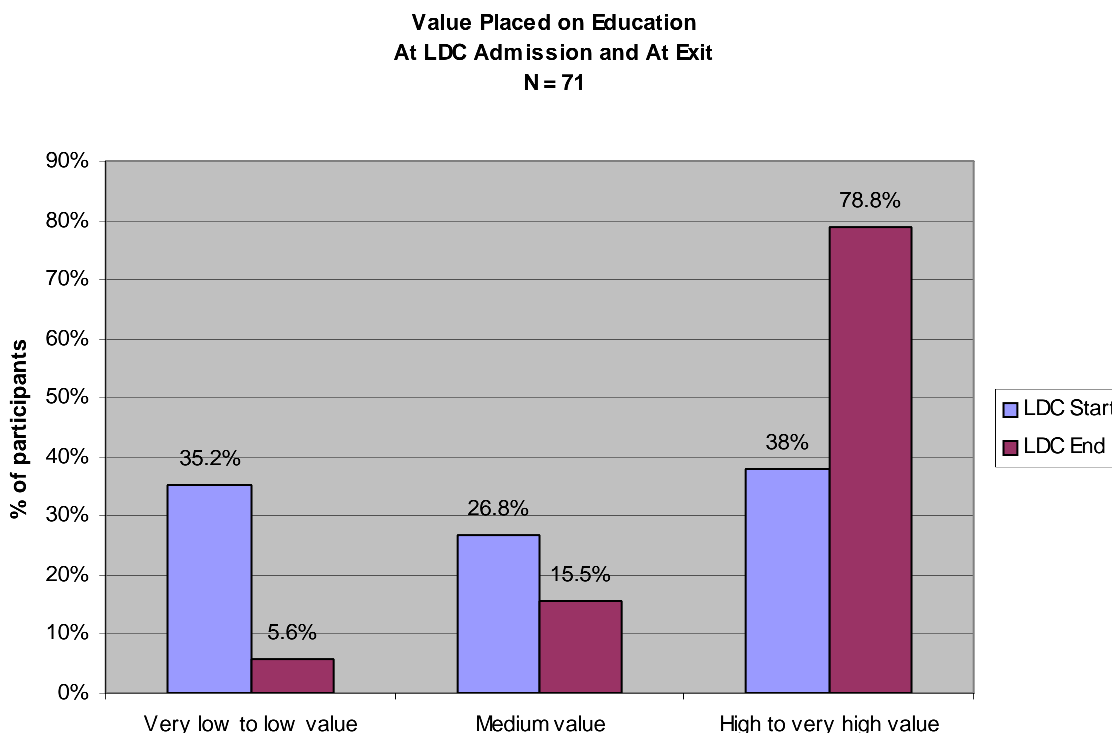
	LDC Survey Participants		NLSCY Survey PMK <=30	
	N	**%**	**N**	**%**
Less than high school	6	8.6%	9	28.1%
High school graduation	7	10%	7	21.9%
Some post secondary	26	37.1%	3	9.4%
College or University degree	31	44.3%	13	40.6%
Total	70	100%	32	100%

[23] Luong, M. (2008). Life After Teenage Motherhood. Statistics Canada.

7.2.3 Value Placed on Education

The Louise Dean Centre experience had a measurable impact on the young mother's attitude toward education. LDC staff provides constant reinforcing messages to the young women about the value of education.

Figure 6



7.2.4 Value Placed on Education for Children

The increased value for education that young mothers learn at Louise Dean Centre carries over to valuing education for their children and having high aspirations for their child's educational future.

When asked "how important is it to you that your child have good grades in school," 90.9% of LDC mothers in our survey said it was important or very important. The rest of the LDC mothers said it was somewhat important.

LDC mothers are more ambitious for their children than the average family might be. When asked "how far do you hope your child will go in school," 94% of LDC mothers said they would like to see their child achieve some level of post secondary education, compared to 87% of NLSCY parents. And the other 6% of LDC mothers hoped their children would pursue trade or technical education.

7.3 Impact of Mentors

"Supportive relationships with non-parent adults can powerfully influence the course and quality of adolescents' lives."[24] Researchers working from within a risk and resilience framework have repeatedly called attention to the protective influence of supportive relationships with adults.[25] Others have noted the critical importance of significant adults in promoting the healthy development of highly stressed youth.[26]

LDC staff plays a key support and mentoring role for the young women. Eighty-six percent (86%) of young mothers identified at least one person at LDC who had mentored or inspired them. The young women identified specific teachers, social workers, nurse and child care staff who had had a positive effect on their life. They described staff as emotionally supportive – someone they could talk to about anything.

Many of the **short-term impacts of mentors** were related to staying motivated and continuing at school.

> *K really helped keep me motivated to be there (at LDC).*
>
> *W got me into reading, which I hated. She made me a good student.*
>
> *B got me through the rough times. When I wanted to give up she was there.*
>
> *Teachers were inspiring me to be more and making me believe I could do it and keeping on me to get my stuff done.*
>
> *L saw something in me that I didn't at the time. She knew I could do it and pushed me to do so. She motivated me to work hard.*

[24] Rhodes, J. (2001) 'Youth Mentoring in Perspective', *The Center* Summer. Republished in *the encyclopedia of informal education*, www.infed.org/learningmentors/youth_mentoring_in_perspective.htm
25 Masten, A. S., and Coatsworth, J. D. (1998) The development of competence in favorable and unfavourable environments: Lessons from research on successful children. American Psychologist 53 (2), 205-220.
[26] Garmezy, N. (1985) Stress resistant children: The search for protective factors. In J. E. Stevenson, ed., Recent research in developmental psychopathology, 220-227. Oxford: Pergamon.

7.3 Impact of Mentors – cont'd

Longer-term impacts of mentors have helped the young women believe in themselves, finish their education and pursue their goals and dreams. The influences of Louise Dean Centre continue to provide support as the young women move through their lives.

She inspired me to become more than what everyone expected from me, being a single mom and all. She taught me discipline, good work ethics and a positive attitude. All of that I have brought with me through my years.

In the short term I didn't see it,
but now I can hear their voices telling me what to do,
encouraging me to push myself harder as a parent.

She got me into my social work career. I still think of her a lot.
When in a difficult situation I think to myself,
"what would N say about this."

Telling me I could do it helped me to graduate.

Gave me strength to not do things I might have regretted.

Knowing that there were people you could trust.
I didn't believe in friends at the time. I was a very sad person due to my abusive relationship.

She was a good role model as a strong woman.
Made me realize I had to take charge of my life.

7.4 Employment

Attendance at Louise Dean Centre and participation in the Life Skills program promotes positive attitudes toward school and work, and teaches specific skills such as routine, structure and discipline.

Young mothers in the LDC study were more likely to be employed than a comparative group of young mothers from the NLSCY.

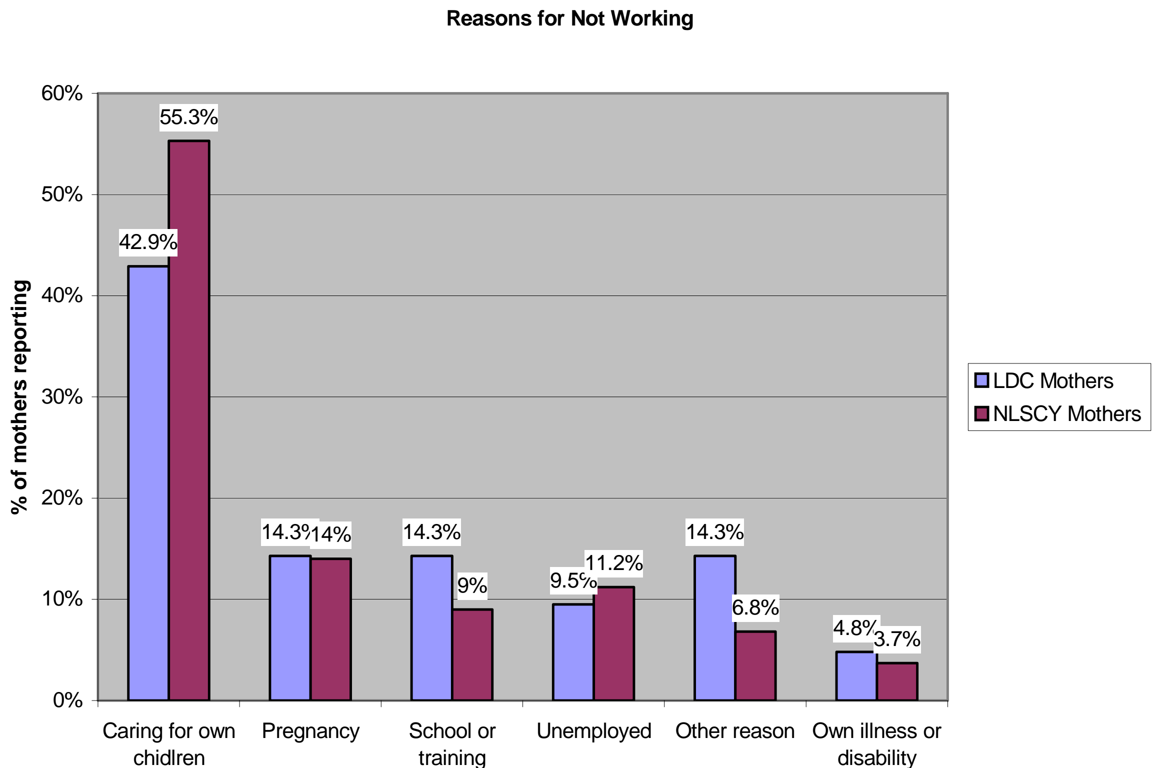
- **87.1% of LDC mothers** worked in the past 12 months
- 75% of NLSCY mothers worked in the past 12 months

This may be partially due to the higher number of single parents in the LDC study group.

Most of the LDC mothers worked full-time (60.1%). A significant number of LDC mothers (46%) reported working more than 40 hours per week. The majority of LDC working mothers were very satisfied (53%) or somewhat satisfied (26%)with their work.

The relative frequency of reasons for not working was similar in the LDC and NLSCY groups. The most common reason for not working was because mothers were at home caring for their children, or they were pregnant. LDC mothers were more likely to be engaged in school or training programs.

Figure 7



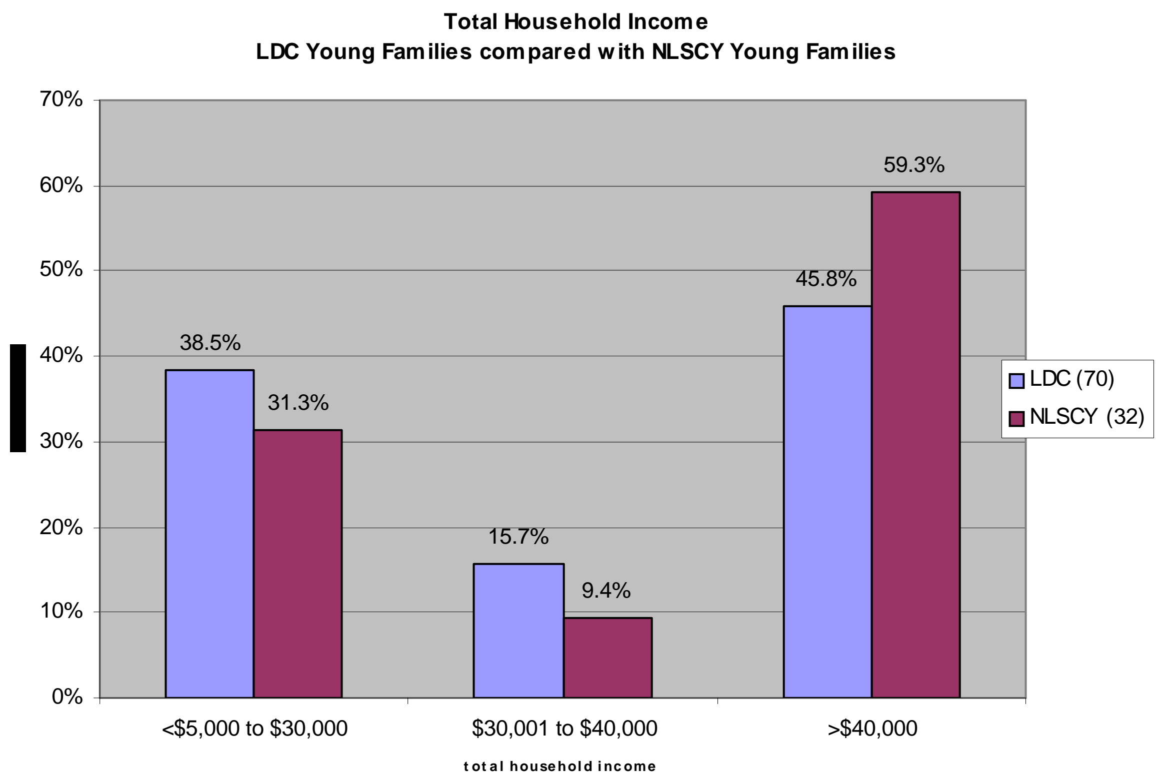
7.5 Financial Situation

Young mothers in the study appear optimistic about their financial future. When asked about their financial situation compared to year ago,

- one third said they were a lot better off financially,
- one third said they were somewhat better off and
- one third said they were about the same.

Although many LDC families (45.8%) are doing well financially, overall the LDC group has generally lower average household incomes than the comparative NLSCY group.

Figure 8



This may be explained by the fact that there are twice as many single parents (one income) families in the LDC group as compared with the NLSCY sample. Within the LDC sample, a higher proportion of the single-parent group was below the LICO cutoff (55.6% vs 30.2%) and this difference was statistically significant ($p = 0.046$).

Table 10:

2004 Before-tax LICO Measures for Canadian Cities with 500,000+ residents

Family Size	1	2	3	4	5	6	7+
LICO	$20,337	$25,319	$31,126	$37,791	$42,862	$48,341	$53,821

Source: Canadian Council on Social Development

In spite of their educational and employment achievements, young women who are parenting alone continue to be financially disadvantaged. This financial disadvantage is at least partially due to structural factors in Canadian society that make women more vulnerable to poverty. Women earn approximately 73% of what men earn for full-year, full-time work, including women with university degrees.[27]. Women earn less than men even if they work in the same sectors or even in the same job. There are no occupations in which women's average earnings exceed men's, not even in female-dominated areas such as clerical work and teaching.[28] In Alberta women constitute 60.2% of minimum-wage workers and the majority of low-wage workers, heavily weighted in the service sector jobs with no benefits.[29]

[27] Morris, M. (April 2004). Fact Sheet: Women and Poverty. Ottawa, ON: The Canadian Research Institute for the Advancement of Women. [From Statistics Canada (2000). Women in Canada 2000, A gender-based statistical report. Ottawa, ON: Minister of Industry) p. 141, 143].
[28] Ibid p. 156.
[29] Alberta Human Resources and Employment. 2003. *Minimum Wage Profile. January 2003 to December 2003.* Edmonton, AB: Government of Alberta.

7.6 Food Security

Food security can be an indicator of financial well-being and sustainability. The 1998/99 National Population Health Survey revealed food insecurity among 10.1% of Canadian households.[30] Prevalence was greatest among lone mothers with children where 32% had experienced food insecurity in the previous 12 month period.[31]

Most LDC families (74.6%) did not need to use the food bank in the past twelve months. Some families (12.7%) reported using the food bank once in the past twelve months and another 12.7% reported using the food bank more than once.

The recent economic boom in Alberta has seriously impacted cost of living in Calgary, increasing financial pressures on lower income families.

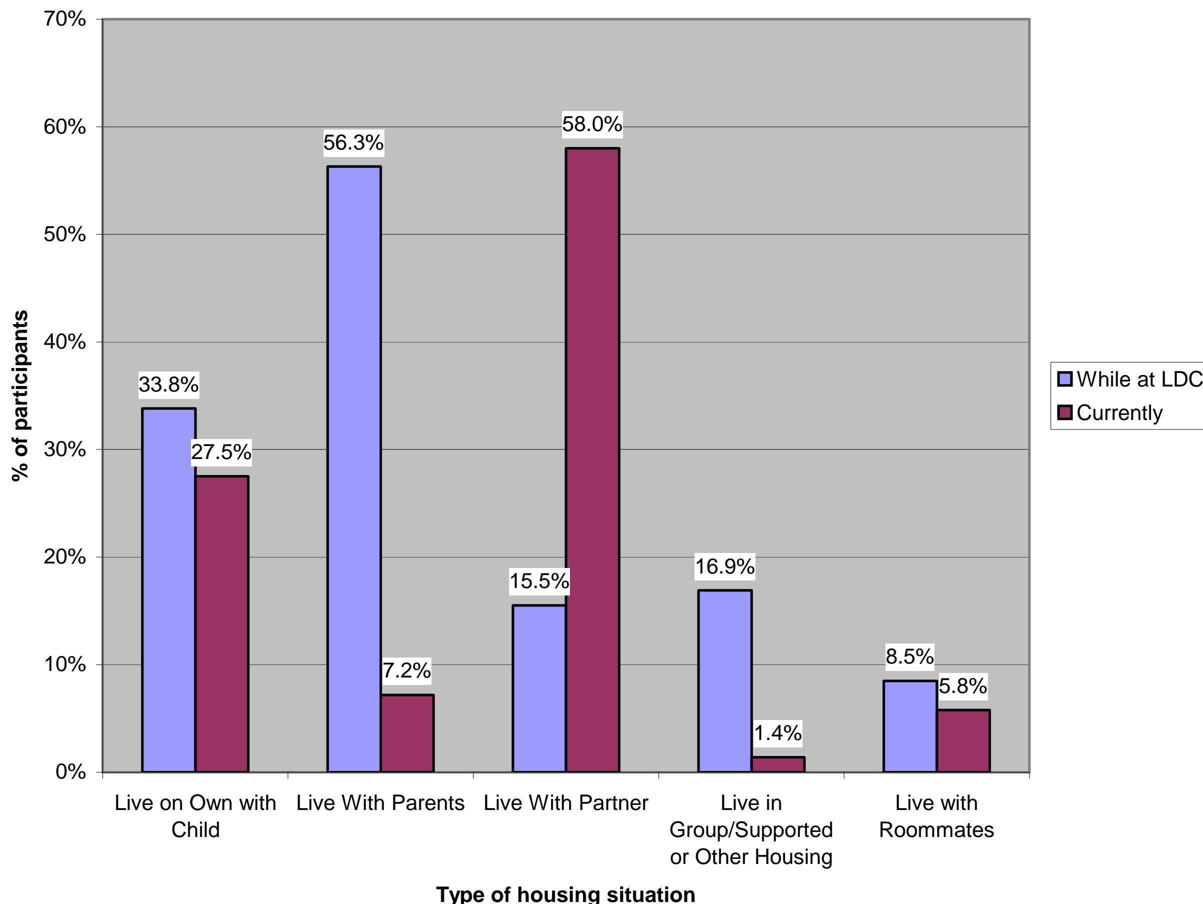
[30] Public Health Agency of Canada. The Social Determinants of Health: An Overview of the Implications for Policy and the Role of the Health Sector
[31] Che J. and Chen J. (2001). *Food insecurity in Canadian households*. Health Reports, 12, 11-22.

7.7 Housing

More than a third (35%) of the young mothers in our study were considered high risk in their housing situation when they applied to LDC. Even after their child was born, 18% of mothers report being homeless at some point in time. Homelessness includes temporary housing arrangements such as staying with friends or relatives, and accessing emergency shelter (e.g. YWCA, second stage womens' shelter).

Due to the high number of single parents, almost a third of young mothers are still living on their own with their child.

Figure 9



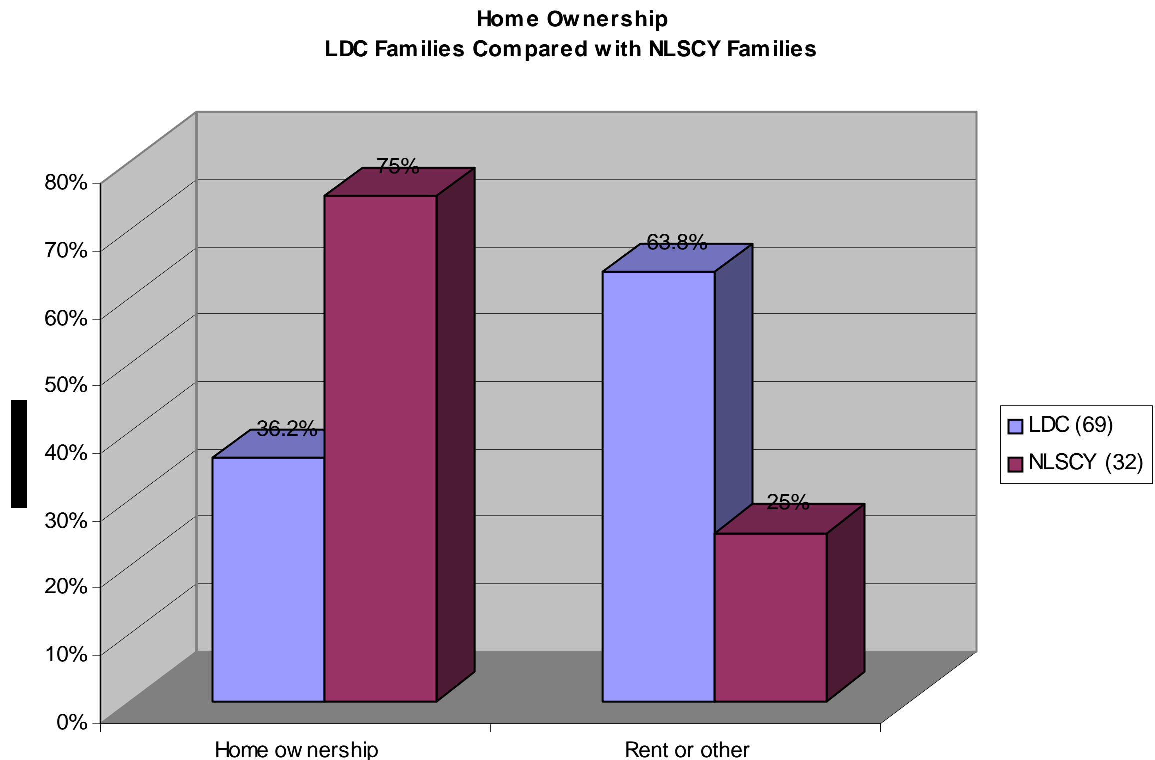
7.7 Housing - cont'd

One of the success indicators proposed by focus group participants (LDC students) was the family's ability to move out of subsidized housing. By this measure, the young mothers in our study have done well. While 46.5% of mothers reported living for some period of time in subsidized housing, at the current time only 13% of mothers are still in subsidized housing.

Twenty-one percent of mothers (21%) report moving more than twice in the past two years. While this can be an indicator of instability, it may also be influenced by the recent disruptions in the Calgary housing market. As rents soared in 2006 and 2007, many renters in Calgary were forced to move in order to find more affordable accommodation.

More than a third (36.2%) of the young families in our study are now in a position to own their own homes. However, home ownership rates among the LDC families are still lower than those of NLSCY families in the same age group.

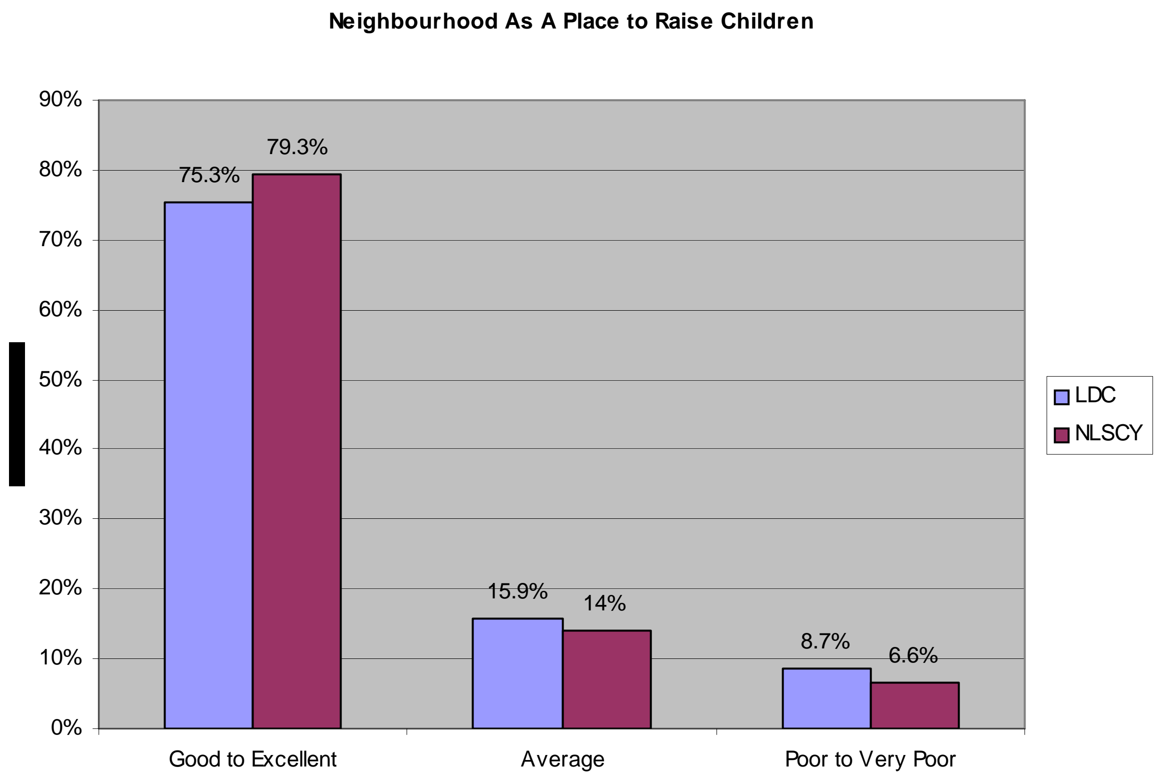
Figure 10



7.7 Housing – cont'd

The majority (82.6%) of young mothers in our study are satisfied to very satisfied with their current housing situation, and 74.3% rate their neighbourhood as a "good to excellent" place to raise children. Almost all of the LDC mothers (96.9%) say they feel safe in their neighbourhood. These rates are comparable to NLSCY participant ratings.

Figure 11



7.8 Mothers' Health

In spite of their original high-risk profiles, most LDC mothers (84.3%) now rate their general health as good to excellent. Over 90% of LDC mothers said they have a family doctor.

Although there is no statistically significant difference in depression rates between LDC and NLSCY mothers, depression continues to present a problem for LDC mothers. Depression was measured using the CESD scale.

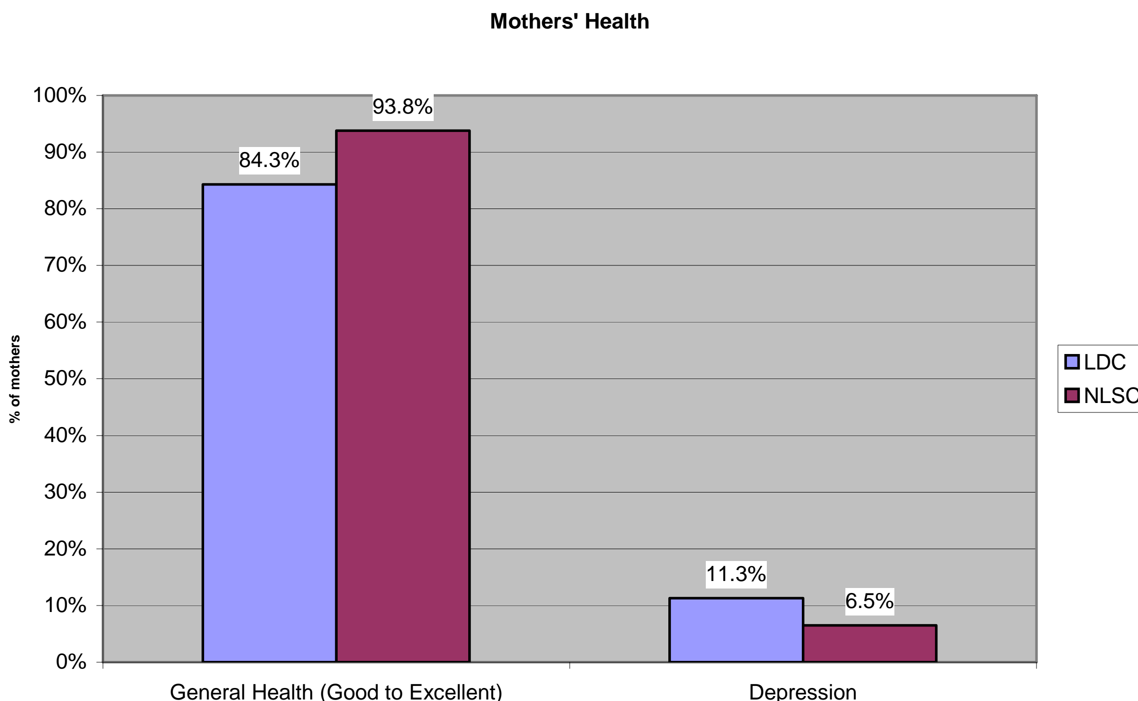
Cumulative adverse life events can lead directly to depression, poor academic achievement and increased risk-taking behaviour.[32] Strategies for coping with stress may not be as well developed nor effective for the single mothers of this study, leading to a cycle of stress response.[33] Predisposition to depressive and anxious responses due to early trauma coupled with the stress of lone parenting can lead to an acute phase of poor mental health, and without adequate support and intervention, can lead to a cycle of chronicity of the mental health concern. [34]

[32] Burn, F. Andrews, G. Szabo, M. (2002) Depression in young people: what causes it and can we prevent it? MJA 177 (7 Suppl): S93-S96.
[33] Hammen, C. Henry, R. Dealy, S. E. (2000). Depression and sensitization to stressors among young women as a function of childhood adversity. Journal of Consulting an d Clinical Psychology. Vol. 68 (5) 782-787.
[34] Burn, F. Andrews, G. Szabo, M. (2002) Depression in young people: what causes it and can we prevent it? MJA 177 (7 Suppl): S93-S96.

7.8 Mothers' Health – cont'd

The following chart shows the percentage of mothers with scores above 16 on the CESD scale as measured at the time of the survey.

Figure 12



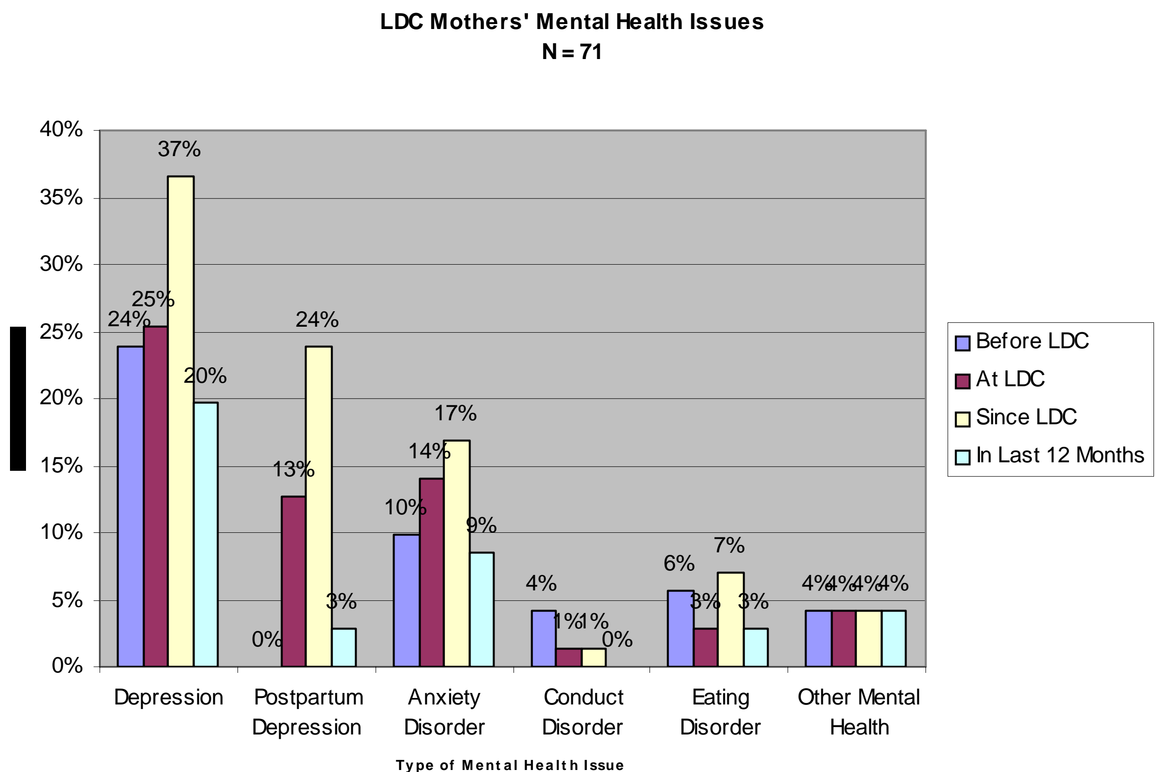
Women who have had a depression prior to pregnancy are more likely to experience depressions during pregnancy and/or during the post partum period. Some of the factors that have been found to contribute to depression during pregnancy are having an unwanted pregnancy, additional responsibilities and financial stresses, being in a relationship that is perceived as unsupportive, lack of other social supports, being isolated, a past history of abuse or violence, drug and alcohol abuse/dependence and having experienced recent stressful life events. A third of women who experience depression in their teens or during young adulthood years will have another episode of depression during pregnancy.[35]

[35] Depression in Pregnancy. Public Health Agency of Canada. Available at: www.phac-aspc.gc.ca/mh-sm/preg_dep-eng.php.

7.8 Mothers' Health – cont'd

As young mothers leave Louise Dean Centre and take on parenting challenges the additional stressors appear to negatively impact their mental health. Over time, as their lives stabilize, depression and anxiety levels drop off.

Figure 13



7.9 Lifestyle Issues

The high risk pregnant and parenting adolescents at Louise Dean Centre typically enter the program with multiple lifestyle issues such as smoking, drinking or drug use, partying, negative peer influences, and relative homelessness (i.e. couch surfing or staying with friends). The unexpected pregnancy provides an opportunity and motivation for the young women to turn their lives around. LDC counselors work hard to help the young women change life styles that are counterproductive to the pregnancy and to creating a stable nurturing home environment for the child.

The transition from adolescent lifestyle to parenthood can be difficult.[36] Because teen mothers are still teenagers, they need to attend to their own adolescent development tasks while at the same time taking on complex maternal roles and responsibilities. Success in this dual developmental process requires a great deal of support from specialized teen parenting programs.[37]

[36] Belshy, J. (1984). The determinants of mothering: a process model. *Child Development.* 55;83-96

[37] Sadler, LS, Swartz, MK, Ryan-Krause, P, Seitz, V., Meadows-Oliver, M., Grey, M., Clemmens, DA., (March 2007). Promising Outcomes in Teen Mothers Enrolled in a School Based parent Support Program and Child Care Centre. *Journal of School Health*, Vol 77, No3

7.10 Smoking

The Public Health Agency of Canada reports that cigarette smoking is the principal cause of low birth weight in developed countries. Prenatal smoking is thought to account for about 18% of cases of low birth weight (<2500 g), and also increases risk of shortened gestation, respiratory distress syndrome, and sudden infant death syndrome.[38]

Counsellors and health professionals at LDC use a harm reduction model to encourage pregnant adolescents to decrease their smoking behavior during pregnancy. However, due to the serious and complex presenting issues faced by these young women, smoking cessation often becomes a lower priority for change.

Almost half of the LDC smoking mothers (45%) stopped smoking during their pregnancy. Research suggests that 25% to 40% of pregnant women smokers quit smoking without any intervention for at least a brief time while pregnant. Therefore the number of LDC mothers who quit smoking during their pregnancy is slightly higher than would be expected without intervention, suggesting that the counseling at LDC is having some moderate effect in helping pregnant adolescents to choose a smoke free pregnancy.

Research suggests that quit rates attained during pregnancy most often are not maintained. In a study by Sexton (1994) 72% of women who quit smoking during pregnancy were smoking again within three years and 91% of those who did not quit during pregnancy were still smoking.[39] Among the LDC group only 42% of those who quit smoking during their pregnancy are smoking again now, while 58% have maintained their smoke-free status.

The LDC rates of remaining smoke-free after pregnancy exceed the smoke-free rates found by previous researchers (i.e. Sexton 1994). However, current smoking rates for LDC mothers (52%) are still higher than the NLSCY comparison group (31%). Most of the LDC mothers who are current smokers have a lengthy history of smoking behavior.

[38] Moner, S. (date unknown). Smoking and Pregnancy. Public Health Agency of Canada. Available at: www.phac-aspc.gc.ca/publicat/clinic-clinique/pdf/s1c3e.pdf
[39] Sexton M and Hebel JR: A clinical trial of change in maternal smoking and its effect on birth weight. JAMA 1984; 251: 911-915

Figure 14

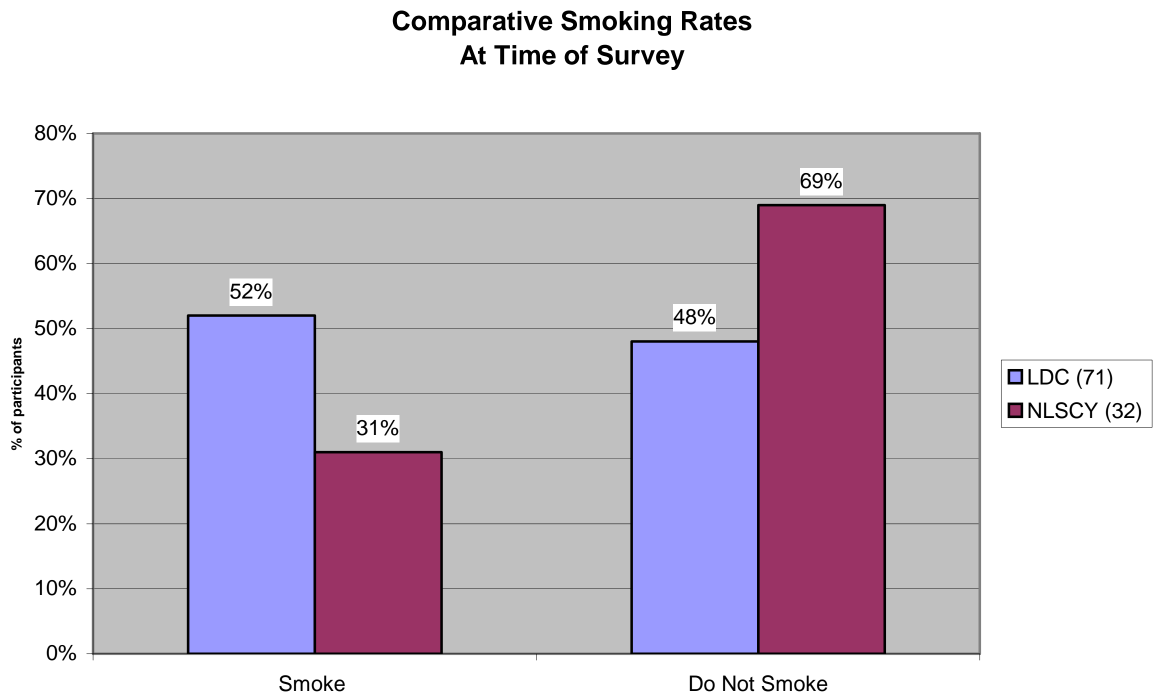
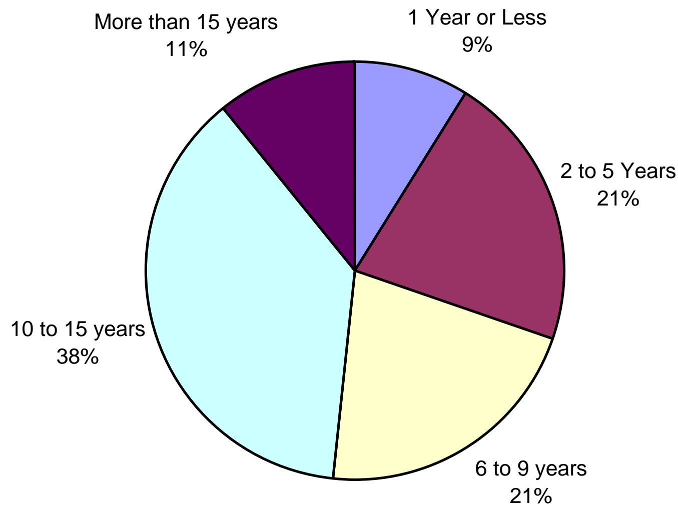


Figure 15



For those LDC mothers who were able to quit smoking, their pregnancy was a strong motivator. The most common reasons given for quitting were due to pregnancy, for personal health and for children's health.

Table 9:

Reasons for Quitting Smoking N = 42	
Pregnancy	22%
Personal Health	22%
Children's Health	18%
Other	5%

When asked what was most helpful in quitting, most mothers said it was out of concern for their children. Others mentioned TV ads, encouragement from a doctor or nurse, and encouragement from their partner. Strategies used in quitting included goal setting, working out (exercise), and use of aids such as the Nicotine Patch.

7.10.1 Second Hand Smoke

The impact of second hand smoke on children is of growing concern in Canada. Learning Centre staff at LDC work with young mothers' to increase their awareness of the harmful effects of second hand smoke on their children.

Physicians for a Smoke Free Canada report that second hand smoke is a major cause of childhood illness.[40] One of the adverse health effects in children includes increased severity of asthmatic symptoms. American researchers suggest that as much as 13% of asthma cases are due to exposure to second hand smoke.[41]

The observable increase in respiratory health issues within children at the Learning Centre over the past ten years is of particular concern to LDC staff. Observed and diagnosed respiratory health issues include asthma, Respiratory Syncytial Virus, pneumonia, chest infections and other respiratory conditions resulting in prescribed inhalers.

LDC mothers are aware of the harmful effects of second hand smoke, and most of the mothers (69%) say their children are never exposed to second-hand smoke. Looking specifically at the group of mothers who smoke, 51.3% said their children are never exposed to second-hand smoke and another 35% said their children are only occasionally exposed to second-hand smoke.

[40] Cigarette Smoke and Kids Health. Physicians for a Smoke Free Canada. Available at: www.smoke-free.ca/Second-Hand-Smoke/health_kids.htm#impactonhealth
[41] Joseph diFranza and Robert Lew, Morbidity and Mortality in Children Associated with the Use of Tobacco Products by Other People, Paediatrics, 1996, 97:560-568].

7.11 Drinking Behavior

Alcohol use is of particular concern with pregnant adolescents at Louise Dean Centre. The potential impact of alcohol on the fetus has been well established. Fetal Alcohol Syndrome is a major cause of preventable birth defects and the leading form of developmental delay in North America. The Government of Canada recommends that there is no safe time or safe amount of alcohol to drink when pregnant.[42]

Pregnant women's use of alcohol cannot be separated from other issues in their lives, such as violence and socioeconomic status, and their alcohol use is often not easily isolated from other potentially harmful behaviours, including tobacco and other drug use.[43]

Forty-two percent (42%) of young women in the study said they drank alcohol before they knew they were pregnant and for most of these young women, alcohol was identified as a risk factor at admission to LDC. Four of the young women (7%) said they were drinking every day.

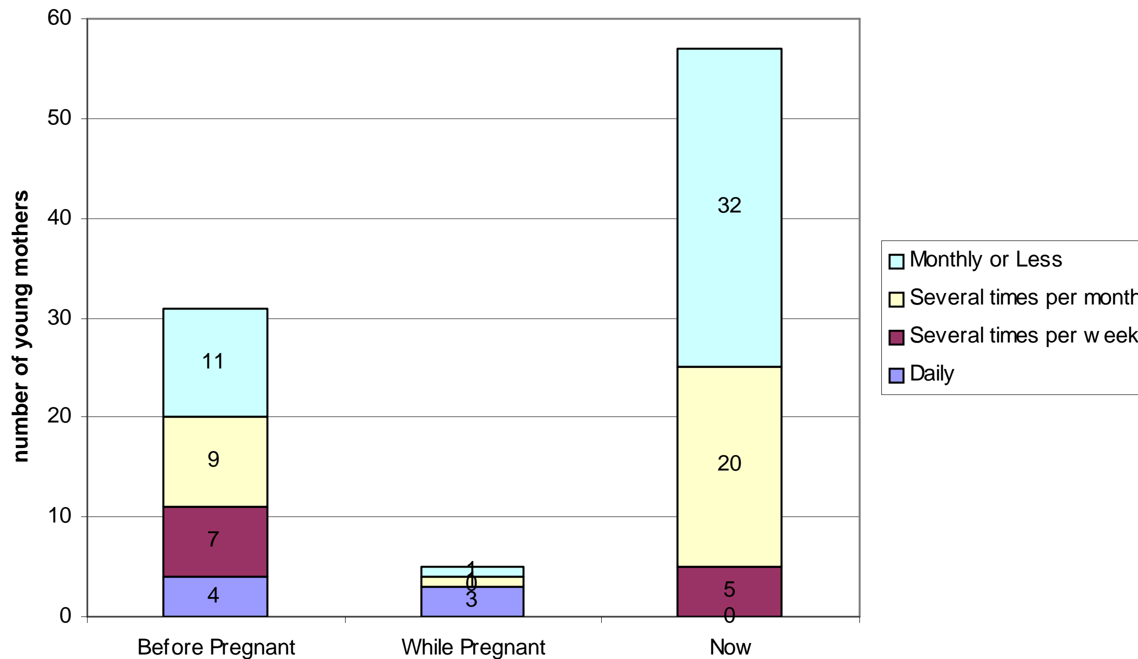
Thanks to targeted messaging in prenatal education and parenting classes, students at LDC are well informed and well supported to abstain from drinking alcohol during their pregnancy.

Almost all (97%) of the LDC mothers said they did not drink while pregnant. Of the four young women who were drinking every day prior to their pregnancy, two continued this regular drinking behavior during the pregnancy but now report more moderate drinking.

[42] Fetal Alcohol Sepctrum Disorder. FASD Fact Sheet. Available at http://www.phac-aspc.gc.ca/fasd-etcaf/index.html

[43] Legge, C., Roberts, G., & Butler, M. (2001). Situational analysis. Fetal alcohol syndrome/Fetal alcohol effects and the effects of other substance use during pregnancy. Ottawa: Health Canada.

Figure 16



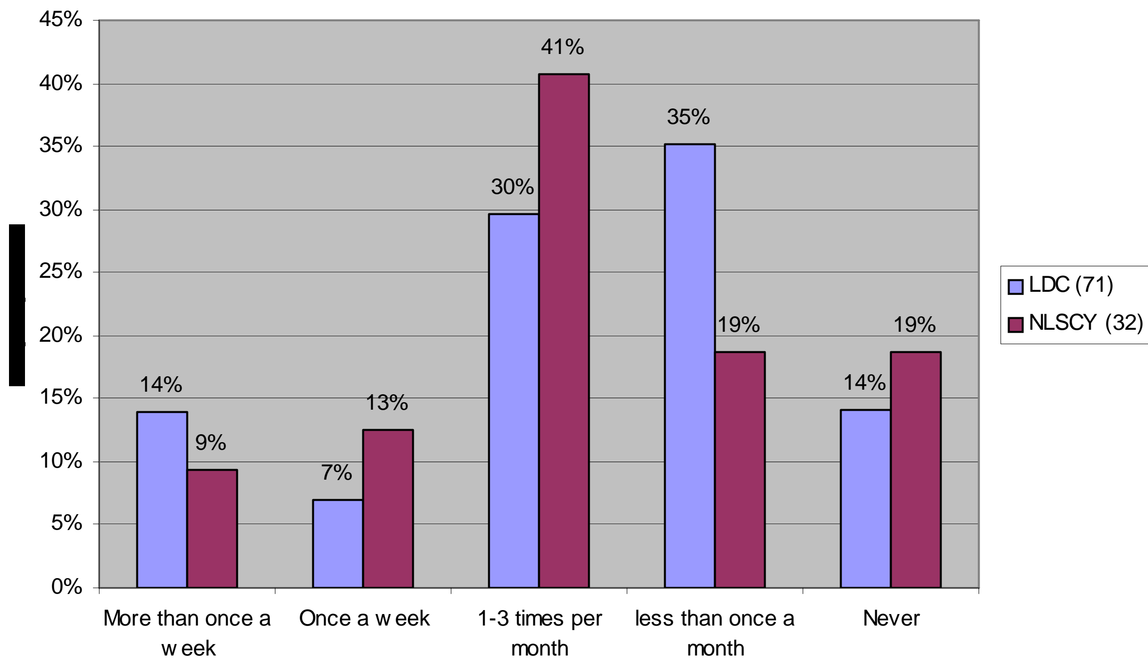
Another issue which LDC staff increasingly encounter are pregnant adolescents who are themselves affected by FASD, making the work toward a healthy pregnancy and good parenting even more challenging. Thanks to FASD national and provincial strategies, targeted assessment for FASD is becoming more available and long-term mentoring programs are being funded to support FASD mothers to parent.

One of the young women in the study sample indicated FASD as a personal health challenge.

7.11 Drinking Behavior – cont'd

Current drinking behaviour among the LDC study compares favourably with that of the general population within the same age group. More than half of LDC mothers (54%) drink less than once a month or not at all compared with 38% of NLSC mothers.

Figure 17



7.12 Drug Use

As adolescents age, their likelihood of engaging in risky behavior increases. Previous analysis of NLSCY data indicates that when adolescents were asked about their drug use during the 12 months prior to the survey, 44% of 16 and 17 year olds reported that they had smoked marijuana. Among higher risk youth who reported staying out all night without permission, 72% reported that they had tried smoking marijuana.[44]

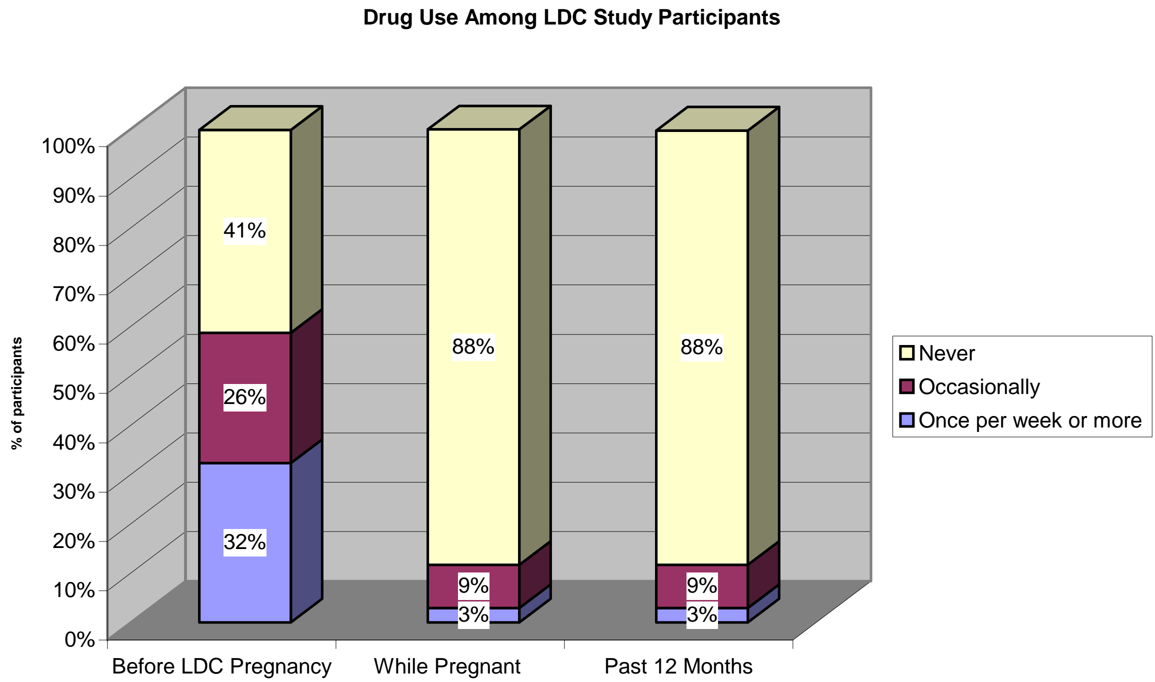
The significant rate of drug use among LDC study participants prior to their pregnancy is consistent with drug use behaviors of other high-risk adolescents in the general population, as indicated by the NLSCY data on youth. Before coming to LDC, 58% of the adolescents were using drugs and 32% were frequent users (once a week or more). The most common drugs reported were marijuana, mushrooms, LSD and Ecstasy. Two women reported using cocaine.

Their pregnancy was a wake-up call that inspired change. Eighty-eight percent (88%) of the young mothers surveyed report that they did not use drugs during their pregnancy.

This change in drug use behavior has been maintained, with 88% of mothers reporting no drug use over the past year.

[44] Statistics Canada. (2003). National Longitudinal Survey of Children and Youth: Challenges of Late Adolescence.

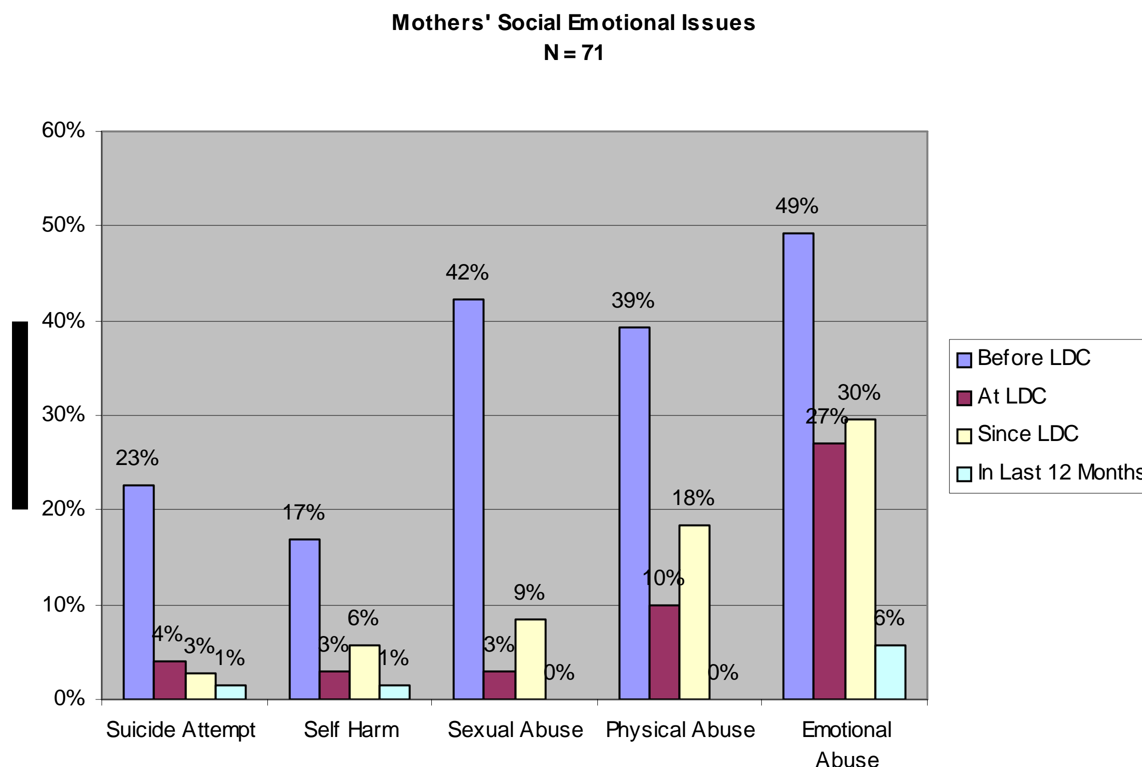
Figure 18



7.13 Social Emotional Issues

High-risk adolescent mothers at LDC struggle with serious social emotional issues requiring intensive counselling and support while at the Center. Even after leaving LDC, issues of physical and emotional abuse continue to challenge young mothers as they struggle to sort out the impact of past traumas in their lives that can often contribute to unhealthy choices in relationships.

Figure 19



A history of child sexual abuse is associated in adult life with insecure and disorganized attachments, and increased rates of relationship breakdown.[45] [46] It is also linked with higher rates in adult life of depressive symptoms, anxiety symptoms, substance abuse disorders, eating disorders and post-traumatic stress disorders.[47]

[45] Alexander, P. C. (1993). The differential effects of abuse characteristics and attachment in the prediction of long-term effects of sexual abuse. Journal of Interpersonal Violence. Vol. 8: 346-362.
[46] Beitchman, J.H. Zucher, K.J. Hood J.E. da Costa G.A. Akman D. (1991). A review of the short-term effects of child sexual abuse. Child Abuse and Neglect. Vol. 15: 537-556.
[47] Mullen, P.E. & Fleming, J. (1998). Long Term Effects of Child Sexual Abuse. Issues in Child Abuse Prevention. Number 9. National Child Protection Clearinghouse. Retrieved at: www.aifs.gov.au/nch/pubs/issues/issues9/issues9.html

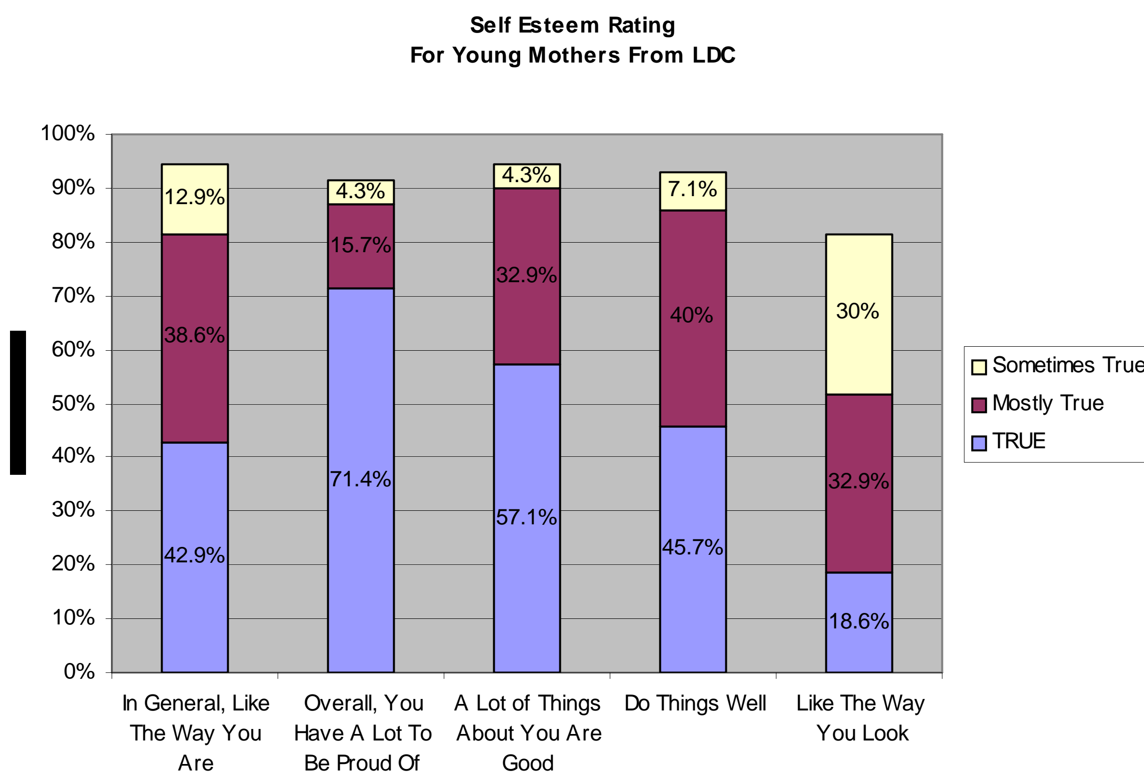
7.13 Social Emotional Issues – cont'd

Other forms of early maltreatment (physical abuse and neglect) can translate into lifelong consequences including low self-esteem and depression and can have a negative effect on ability to establish and maintain intimate relationships in adulthood.[48]

7.13.1 Self Esteem

Low self esteem is often flagged as a predictor of adolescent depression. Recent prospective studies have shown that negative perceptions about social competence, self-efficacy or peer acceptance predict symptoms of depression. In contrast, high self–perceived social competence acts as a protective factor in young people who are at increased risk of depression as a result of negative life events or parental psychopathology.[49]

Figure 20



[48] Colman, R. A. Widom, C. (2004) *Childhood abuse and reelect and adult intimate relationships.* Child Abuse and Neglect. Vol 28 (11): 1133-1151.
[49] Burn, F. Andrews, G. Szabo, M. (2002) *Depression in young people: what causes it and can we prevent it?* MJA 177 (7 Suppl): S93-S96.

7.13.1 Self Esteem – cont'd

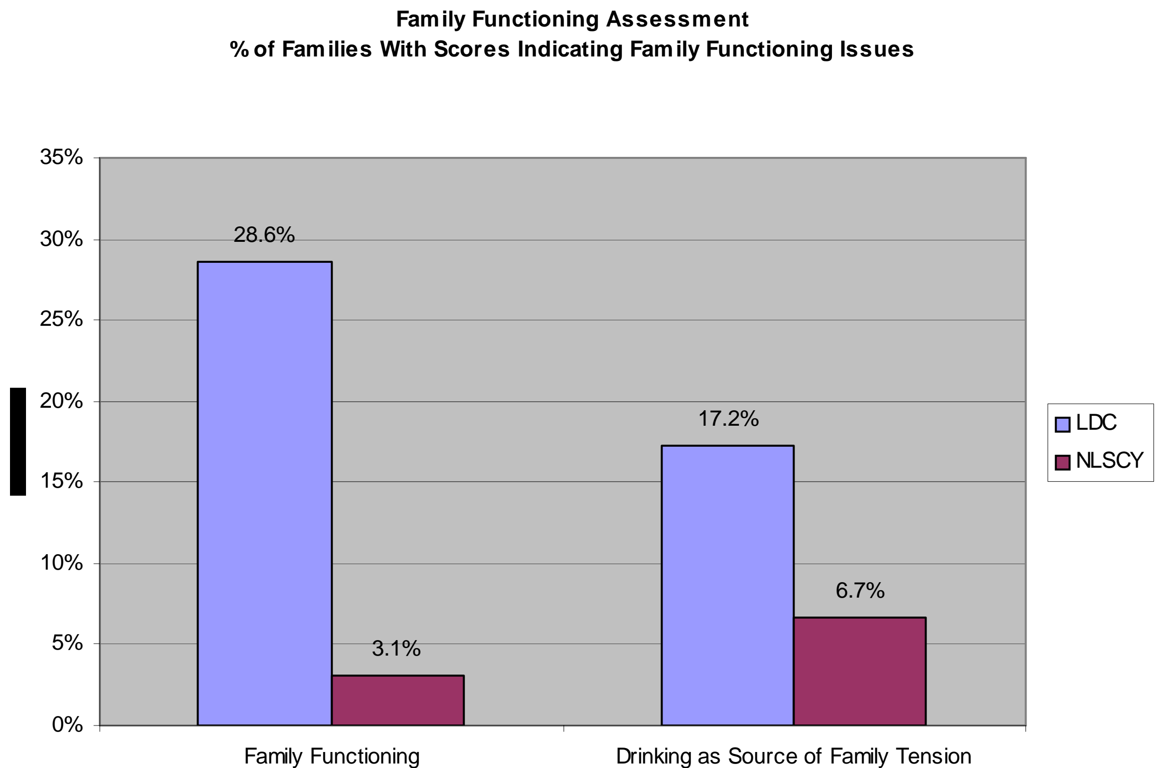
Constant encouragement, positive messaging and mentoring from LDC staff appears to positively impact some aspects of the young mothers' self-esteem, particularly their feelings of pride in their accomplishments.

7.14 Family Functioning

Given their high-risk profiles, many of the LDC young mothers have a long history of complicated relationships (e.g. family of origin, peers, partners). Survey data suggests that although emotional abuse declined after LDC interventions, it continues to be an issue for many mothers (30%) for some significant period of time after exit from LDC.

LDC mothers had significantly higher scores on the Family Assessment Devise than NLSCY mothers indicating more challenges within their family relationships ($p < .003$). LDC mothers were also significantly more likely to report that drinking behavior was a source of tension in their family ($p < 0.001$).

Figure 21



7.14 Family Functioning – cont'd

More than half (66.2%) of the young mothers report having experienced "frequent fighting" with their partner. Almost one third of them (31%) say they have experienced family violence (physical or emotional abuse) at some time in their partner relationships, and 8.5% have used a women's emergency shelter. A recent survey of citizens in Calgary indicated that 15% of those surveyed were concerned about being a victim of family violence.[50] The Calgary sample was an even 50:50 male/female split, so given that family violence may be of more concern to women, the rates could actually be significantly higher.

National family violence statistics indicate that rates of spousal violence are highest among certain segments of the population: those aged 15 to 24; those in relationships of three years or less; those who had separated and those in common-law unions.[51] Alberta has the highest rate of reported family violence in Canada.[52]

Partner abuse of alcohol or drugs is reported by 31% of the women, a factor which may play a role in the family violence.[53] Mothers report other relationship stressors such as custody or visitation disputes (44%) or disputes with their own or biological father's family (58%).

Almost all of the mothers (82%) report breaking up with a partner since their first child was born.

It appears that LDC young mothers willingly seek support to deal with relationship issues as they move forward with their lives. Counselling is one of the community services most frequently used (47%) and highly rated by LDC young mothers. Fortunately, most of the women are able to remove themselves from unhealthy abusive relationships over time.

> *I was doing very well in school until I met him and got pregnant . He was a bad apple and I wasn't. I was into sports, school, no drugs or alcohol. He was abusive before and during the pregnancy. He pulled a knife on me and I had him charged.*

[50] Cook, D. Richter-Salomons, S. van't Veld, W. (2006). *Signposts 2006. A Survey of the Social Issues and Needs of Calgarians*. City of Calgary Social Policy and Planning. p. 12
[51] Statistics Canada. (2005). Family Violence in Canada: A Statistical Profile.
[52] Statistics Canada. (2004).General Survey.
[53] Note that partner abuse of alcohol or drugs could have occurred at any time over the 10 year study period and may not reflect the current partner situation.

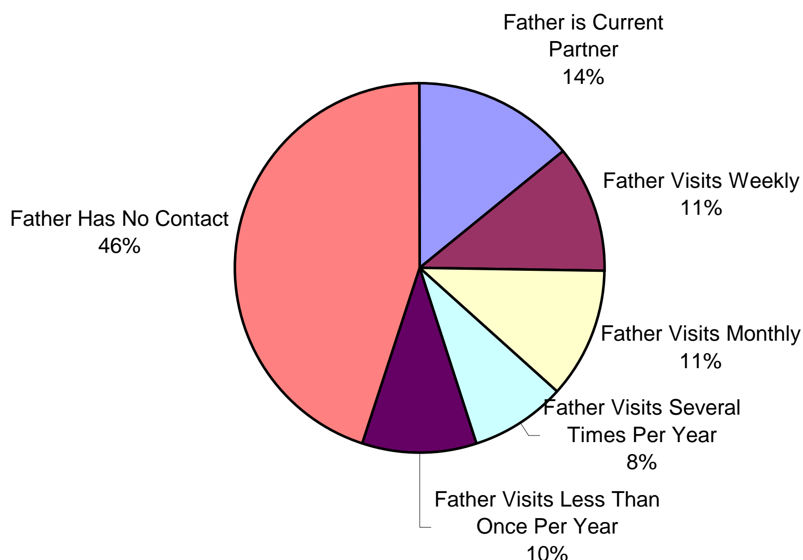
7.15 Social Support

Parents need a supportive environment in which to raise their children. Support from family, friends and neighbours is important in helping parents to cope with the stress of raising children.[54] For high-risk adolescent mothers, building social support systems and nurturing relationships provides a basis for future success. Research suggests that the combined influence of a young mother's internal resources, environmental stressors and social supports are predictors of parental competence. Internal resources include self-esteem and self-efficacy. Sources of environment stress and social support include family relationships, partner relationships and community supports.[55]

LDC interventions include attention to increasing personal support networks. Programs such as Parent Support Groups, Teen Parent Friend, Baby F&ST, father and grandparent groups are conscious efforts to help mothers build strong healthy support networks.[56] In addition, young mothers are encouraged to use community programs such as Family Resource Centres, where they can meet other young parents.

[54] Public Health Agency of Canada. Healthy Development. Available at: www.phac-aspc.gc.ca/dca-dea/publications/healthy_dev_partb_4_e.html
[55] Sadler, LS. Anderson, SA, Sabatelli RM.. (2001). Parental competence among African American adolescent mothers and grandmothers. *Journal of Pediatric Nursing.* Vol 16:217-233
[56] View program descriptions on page 7.

Figure 22



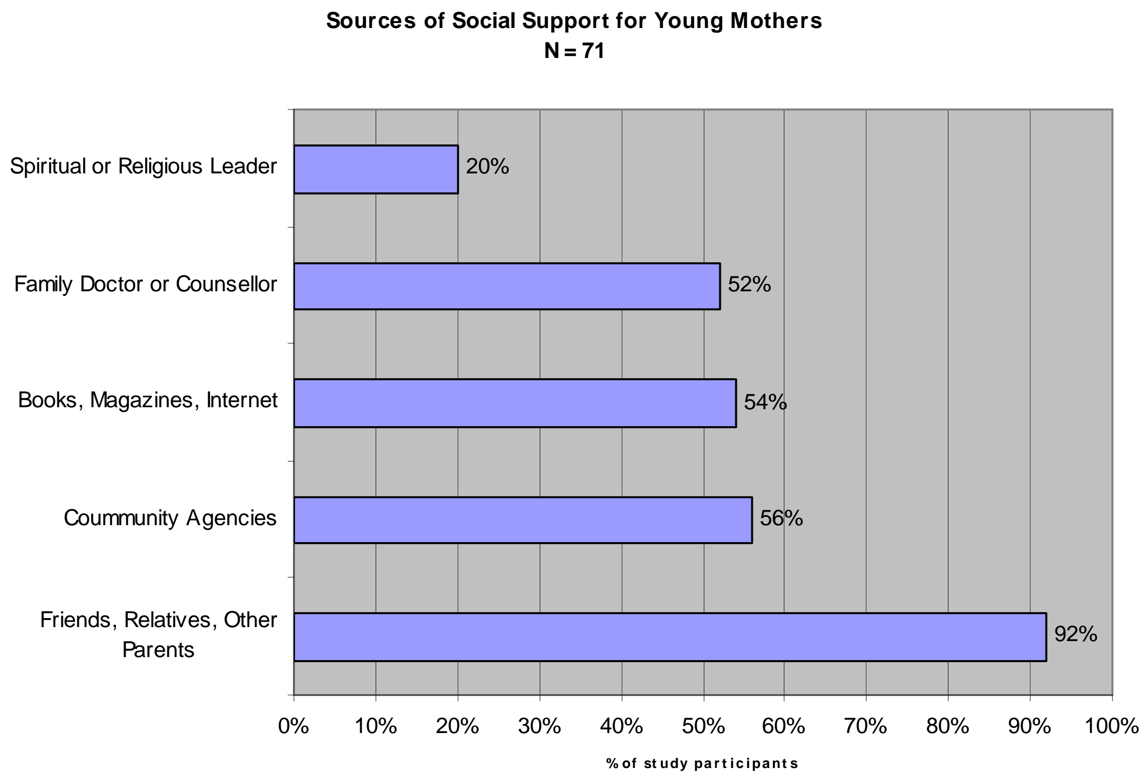
Adolescent mothers have less opportunity to rely on the biological father as a source of support. In 45% of LDC families, the biological father has no contact with the child and in another 10% of cases, biological fathers have minimal contact, less than once a year.

In those families where the biological father does have contact with the child on a regular basis, most mothers (81%) describe the contact as positive.

In half of the cases studied, the biological father's extended family maintains regular contact with the child, providing an additional source of social support.

The following graph shows typical sources of support identified by young mothers in this study. It demonstrates the value of community programs such as Family Resource Centres where young mothers can meet and seek support from other parents as well as staff.

Figure 23



LDC mothers have done a good job of building their own social support networks. In comparison between LDC and NLSCY young mothers, there was no significant difference in social support scores.

7.16 Child Welfare Involvement

In Alberta, the focus of Child Welfare "is on supporting families to be healthy and make sure that children grow up in safe and nurturing homes."[57] Part of the department's role is to protect children at risk for abuse or neglect through their Child Protection program. Other programs such as Family Enhancement are voluntary alternative programs that support parents to enhance parenting competence. Child Welfare often has access to resources such as financial assistance, specialized psychological services, infant and youth mental health services, etc. that can be of great benefit to families

Counselling staff at LDC encourage young mothers to use Child Welfare as a support. Young mothers can and do access additional resources through Child Welfare, resources that can support their family. Many of the mothers' comments about child welfare echo this positive viewpoint.

> *My first worker (Child Welfare) was great. She helped arrange transportation to life skills. She was there for us, helping us.*
>
> LDC Mother's Comment

During the early years, adolescent parenting can be challenging. Difficult partner or family relationships can add to the young mother's parenting challenges. Over the course of their early parenting years, 33% of the families in our study had some children welfare involvement.

There are a number of reasons why young parents connect with Child Welfare. In one third of the child welfare cases, involvement was due to family violence (4 cases) or family/custody disputes (4 cases). In some cases the child welfare visit was to check on the biological father's background to determine visitation rights.

In one case the mother herself requested Child Welfare involvement. She was concerned about possible sexual abuse of her child. Due to their own history of sexual abuse, LDC mothers are highly sensitive to the issue and extremely protective and cautious with their own children.

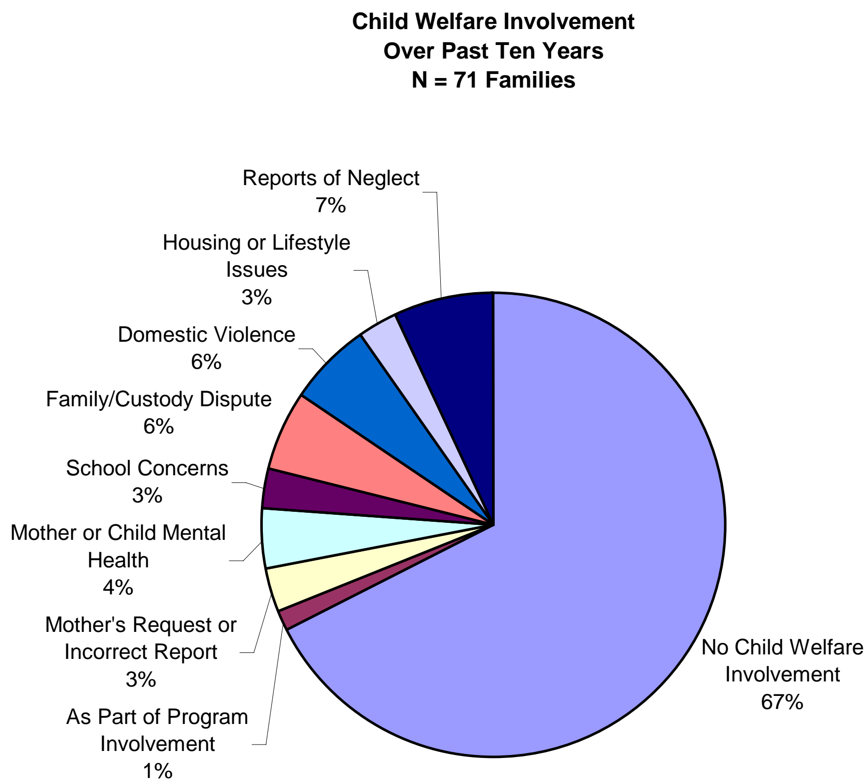
In 12% of the child welfare cases (3 cases), the involvement was to support mother or child in their challenges with mental health issues.

[57] Child Welfare. Alberta Children and Youth Services. Available at http://www.child.alberta.ca/home/589.cfm.

7.16 Child Welfare Involvement – cont'd

Currently, of the study group of 74 children, only one child has active child welfare (CW) involvement. This involvement is due to the child's mental health issues. The mother reports that "*the current involvement is working. The worker (CW) is there to help deal with my child's issues so she doesn't regress. They are absolutely a good support when they are with you. Wow, it's amazing what they can do for you.*"

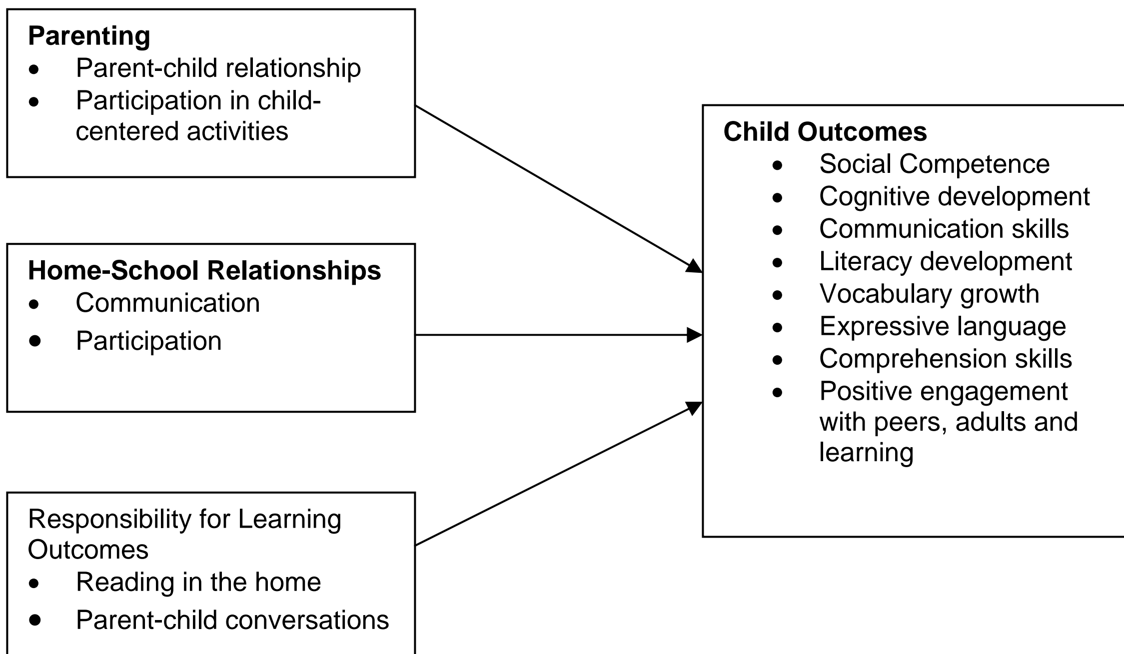
Figure 24



7.17 Parenting

"Parenting practices have important effects on a child's social and cognitive outcomes and on the likelihood that a child is vulnerable in some way."[58] The following process map from the Harvard Family Research Project explains how family involvement makes a difference in child outcomes.

Figure 25 **Processes of family involvement and young children's outcomes**[59]



A key aspect of the Louise Dean Centre program is to support young mothers to develop a strong attachment and nurturing relationship with their child. The counseling program has qualified NCAST trainers on staff and both Learning Centre and counseling staff are well trained in attachment theory and practice[60]. In addition, emphasis is placed on increasing awareness and understanding of child development, building skills in communication (i.e. reading infant cues), basic childcare, safety, and nutrition.

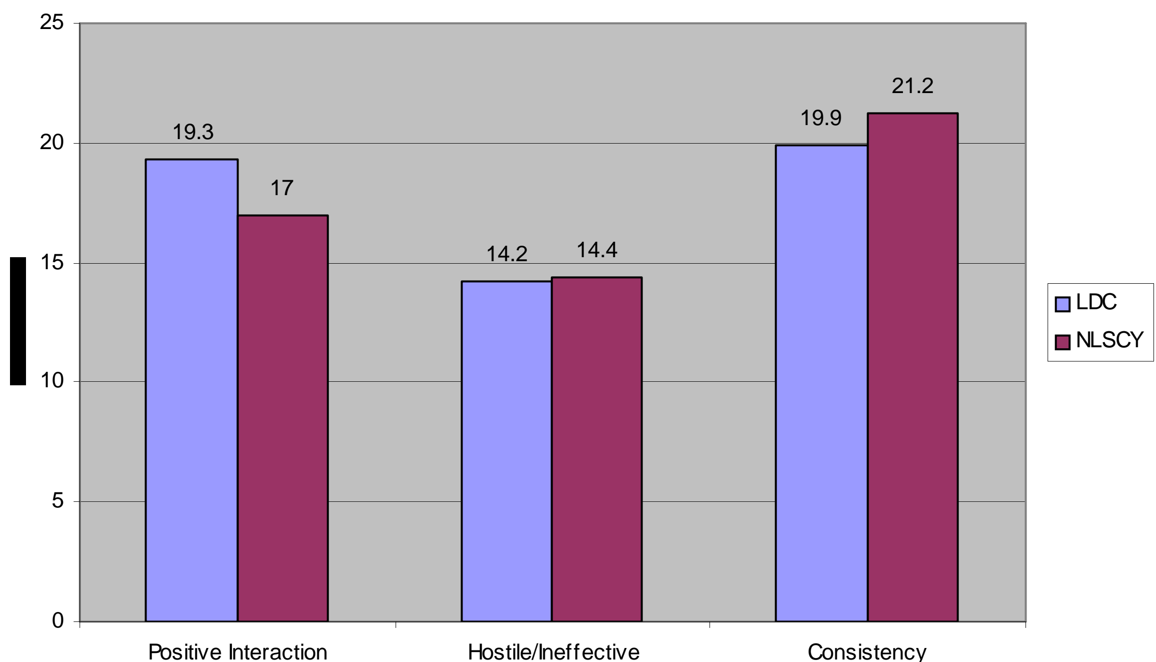
[58] Chao, Ruth K. & Willms, J. Douglas, (2002). The Effects of Parenting Practices on Children's Outcomes. In Vulnerable Children. Findings from Canada's National Longitudinal Survey of Children and Youth. J. Douglas Willms, editor. University of Alberta Press.
[59] Weiss, H. Caspe, M. Lopez, M. E. (2006). Family Involvement In Early Childhood Education. Harvard Family Research Project. Spring 2006 (1).
[60] Nursing Child Assessment Satellite Training Program (NCAST), Parent-Child Interaction Scales: Teaching and Feeding

7.17 Parenting – cont'd

The Learning Centre program teaches parents to interact and communicate with their baby. Early literacy is also encouraged. The results of this study suggest that these early teachings have effectively carried over to become standard parenting practices for most of the young mothers.

Parenting assessment scores indicate that LDC mothers compare very favourably with their peers when it comes to parenting their children. Although they scored slightly lower on the Consistency factor (not statistically significant), LDC mothers had significantly better scores for **Positive Interaction** with their children ($p < .001$).

Figure 26



Mealtimes can provide an opportunity to spend time together and for open communication between parent and child. Eighty-two percent (82%) of mothers report eating together with their child daily and the rest ate meals with their child several times per week.

7.18 Use of Other Community Supports

A common program objective for young parents is to increase awareness of community resources and their ability to connect with these resources independently. It appears that the young mothers from LDC have made good use of community resources to support them in their personal journey, their parenting and their family well-being.

Community support services most commonly used include counselling, employment skills training, pre-school programs and respite programs. The following chart illustrates the use and perceived helpfulness of community services.

Table 10: Use of Other Community Programs and Services

Program	Used	Very Helpful or Critical
Counselling	47%	78%
Employment Skills Training	43%	48%
Pre-School Programs	40%	78%
Parenting Programs	32%	82%
Respite (Children's Cottage)	24%	75%
Family Resource Centre	16%	73%
Life Skills Program	16%	82%
Healthy Families (post natal support)	15%	70%
Discovering Choices[61] (education upgrade)	13%	78%
Child Welfare Family Enhancement (support)	13%	22%
Parent Support Groups	12%	63%
Mother Goose (early literacy)	12%	63%
Parents As Teachers	10%	71%
Cultural Programs	6%	75%

Those programs which were rated as most critical to the success of the family include the parenting programs, life skills programs, counseling, pre-school programs, adult educational upgrade programs and respite.

[61] Discovering Choices is another collaborative program offered at the Calgary Achievement Centre for Youth, in which the Calgary Board of Education provides part time and drop-in education upgrading, Catholic Family Service provides child care and parenting suppor (CACY Preojct)t, and the City of Calgary provides youth employment/career counseling.

7.19 Community Involvement

Community involvement can help strengthen social networks and increase social supports for young mothers. Community involvement also provides an opportunity to demonstrate generosity, share skills and experience, and give back to the community. It helps to build self-esteem and confidence, and further consolidate personal skills.

Many of the young mothers (66%) participated in peer support and leadership training programs while at LDC. The young women rated these training experiences as very helpful or critical to their future success.

The young mothers have maintained their generosity and leadership through ongoing community involvement. Currently over half (51%) of the young mothers surveyed say they volunteer often or sometimes in their community and 43% report being involved in local voluntary organizations (school, church, sports, ethnic communities, etc.). Overall volunteer rates are similar to those reported by NLSCY young mothers.

Involvement of Aboriginal parents in local voluntary organizations is almost double that of other young mothers, with 80% of Aboriginal parents reporting involvement.

Since completion of this study, the volunteer coordinator at Catholic Family Service of Calgary reports that several young mothers who participated in the study have come forward to volunteer for the Teen Parent Friend program, to act as friends and mentors to other adolescent mothers.

8.0 OUTCOMES FOR CHILDREN

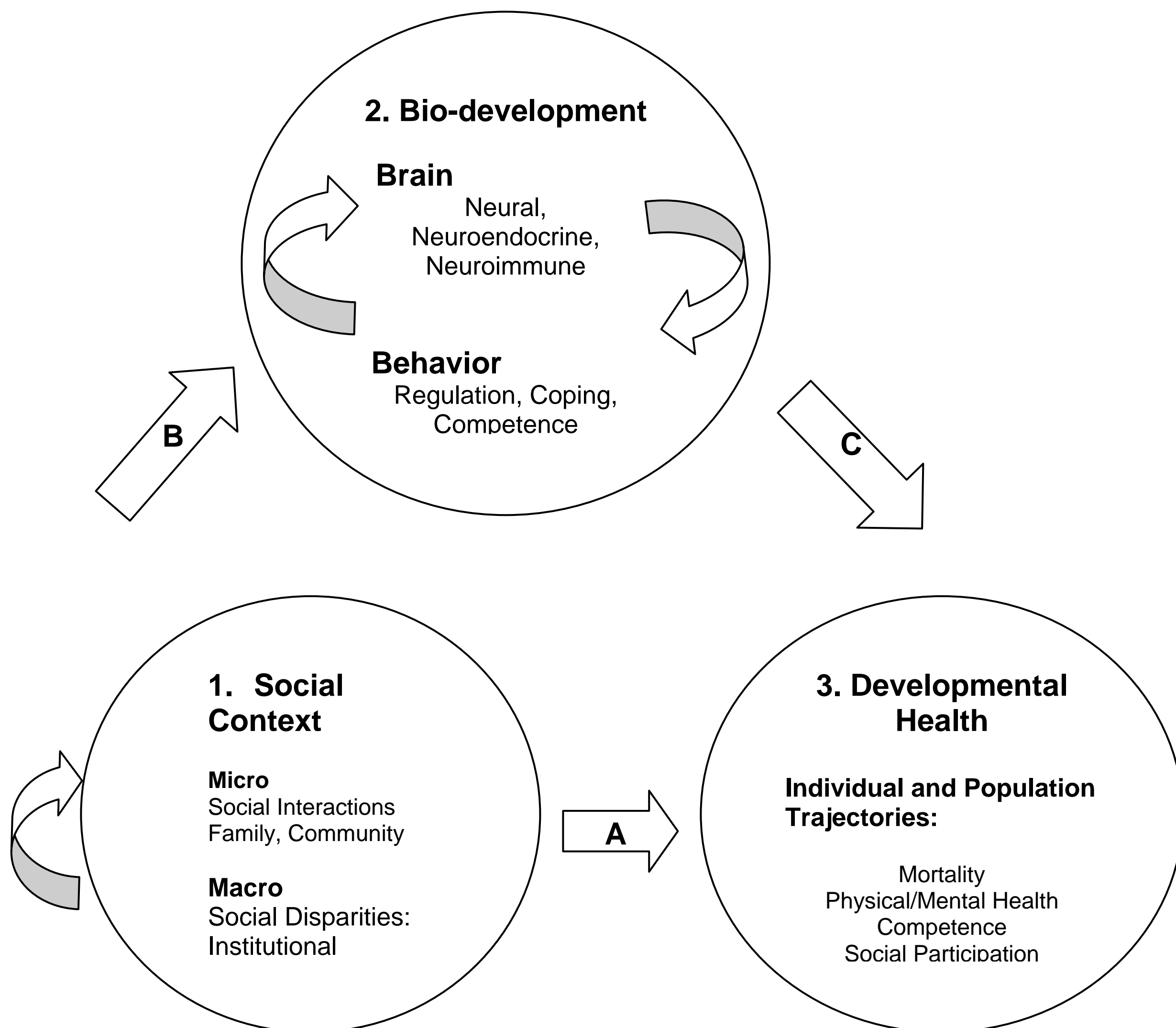
Pre-natal and early childhood experiences can have lifelong impact on physical and mental health, behavior and well-being.

“Health is a consequence of multiple factors operating within genetic, biological, behavioral, social and economic contexts. A person’s health results from the cumulative influence of multiple risk and protective factors that are programmed into an individual’s bio-behavioral regulatory systems during critical and sensitive periods in development. A large number of these critical time points and sensitive periods occur in the first three years of life”.[62]
Researchers have identified a number of specific health conditions in adults that can have their origins in early childhood, including diabetes, asthma, mental health, and heart disease.

The following diagram illustrates the interaction between social context, biological development factors and developmental health.

[62] Halfon, N. Russ, S. Regalado, M. (2005). The Life Course Health Development Model: A Guide to Children’s Health Care Policy and Practice. Zero to Three.

Figure 27 **Bio-developmental Mediator Model – Dr. Daniel Keating**[63]



A loving, secure attachment between parents/caregivers and babies in the first 18 months of life helps children to develop trust, self-esteem, emotional control and the ability to have positive relationships with others in later life. Support to families and parents through a broad range of strategies is the best way to help children get this important head start in healthy development. Experiences from conception to age six have the most important influence of any time in the life cycle on the connecting and sculpting of the brain's neurons. Positive stimulation early in life improves learning, behavior and health right into adulthood.[64]

---

[63] Dr. Daniel Keating presentation on Social, Developmental and Biological Determinants of Lifelong Health. Public Health Agency of Canada Research Forum (2008). Ottawa.
[64] Toward a Healthy Future. (1999). Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health. p.13

8.1 Healthy Pregnancy

The first objective in working with pregnant adolescents is to help ensure a healthy pregnancy and birth outcome for mother and child. The partnership with Calgary Health Region provides an on-site nurse and nutritionist support to young women at Louise Dean Centre. More recently, a physician has been added to the health team.

Almost all of the women in the study (97%) relied on their doctor for pre-natal care. The rest reported receiving pre-natal care from a nurse. Only one woman used a mid-wife. Most of the pregnant adolescents (88%) saw a doctor within the first 12 weeks of their pregnancy. Eight percent (8%) first saw a doctor in their second trimester and 4% didn't see a doctor until the last few months of their pregnancy.

For mothers in the study, the average weight gain during pregnancy was 55.7 pounds and median gain was 55 pounds. This is significantly higher than the typical target weight gain for pregnant women. High maternal weight gain may be correlated with low birth weight and poor birth outcomes. The high weight gains are a growing concern at LDC and in society in general, especially among certain cultural groups (e.g. Aboriginals) where incidence of gestational diabetes, pregnancy induced hypertension can contribute to pre-term birth and consequently lower birth weights. In the LDC study group, ethnicity did not appear to have a significant effect on weight gain. In the study sample, 67% of Aboriginal women had higher than average weight gains compared with 63% of non-Aboriginal women.

Table 11:

Weight Gain During Pregnancy	
BMI	**Recommended Weight Gain**
Below 20	Between 12.5 and 18 kg (28 and 40 pounds)
Between 20 and 27	Between 11.5 and 16 kg (25 and 35 pounds)
Over 27	Between 7 and 11.5 kg (15 and 25 pounds)

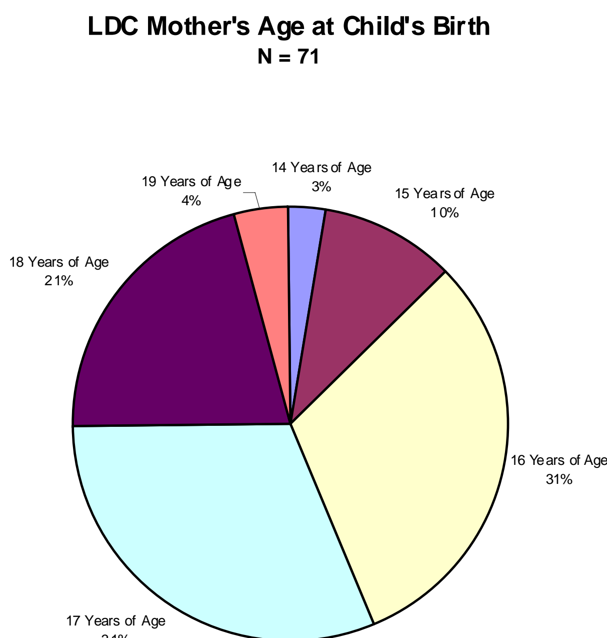
Source: Government of Canada. The Sensible Guide to a Healthy Pregnancy.

8.2 Birth Weight

Low birth weight is an indicator of the general health of newborns, and a key determinant of infant survival, health and development. Low birth weight infants are at a greater risk of dying during the first year of life, and of developing chronic health problems.[65] Alberta's low birth weight rate (6.6%) is above the Canadian average.

Maternal age is a factor influencing low birth weight babies, with younger mothers (<20 years of age) showing higher rates of low birth weight babies. In Calgary the low birth weight rate for mothers under 20 is 6.9 % compared with an average low birth weight rate of 5.7%.

Figure 28



At LDC, health staff provide nutrition counseling and work hard with the pregnant adolescents to ensure a healthy birth weight for babies. Most of the adolescent mothers (92%) used prenatal vitamins during their pregnancy. Almost three quarters of the women (72%) received additional prenatal services through Best Beginnings, a Calgary Health Region pre-natal program partially funded by the Public Health Agency of Canada, Canada Prenatal Nutrition Program.

[65] Human Resources and Social Development Canada. Indicators of Well Being in Canada. Available at: http://www4.hrsdc.gc.ca/indicator.jsp?lang=en&indicatorid=4

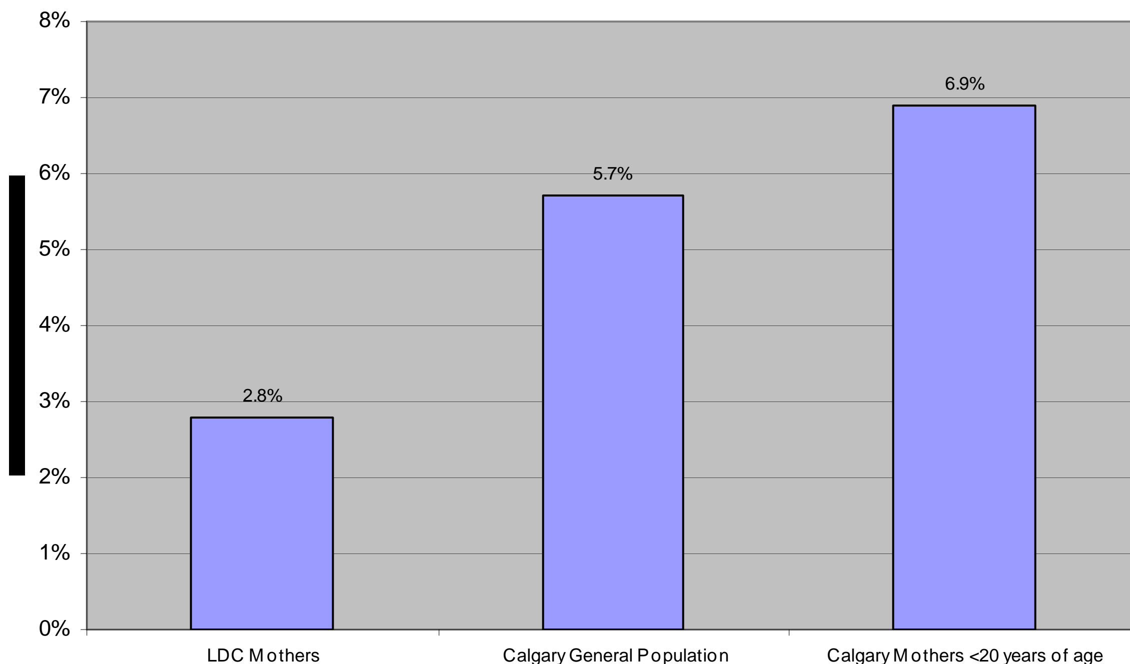
8.2 Birth Weight – cont'd

The Best Beginnings program is specifically targeted to low income, high risk mothers, and provides prenatal education and support in a group setting along with vitamins and food supplements.

Only two of the 74 children born to the LDC mothers were below the low birth weight cut off of < 2500 grams. One child was a pre-mature birth, weighing in at 2 pounds 3 ounces. The other child was a full term baby who was slightly below the cut off, weighing in at 5 pounds 2 ounces.

Results for the young mothers at LDC show a low birth weight rate of **2.8%,** far below both the national average, the local Calgary rate (5.7%) and the Calgary low birth weight rate (6.9%) for young mother under the age of twenty. The absence of low birth weight babies in the LDC follow-up study data is consistent with current experience with babies born to adolescent mothers at Louise Dean Centre. Between the years 2005 and 2007 there was only one low birth weight baby born to pregnant adolescents at LDC.

Figure 29:[66]



Low birth weight rate for 71 LDC adolescent mothers in this study was 2.8%.

These results demonstrate the effectiveness of early targeted wrap around services for pregnant adolescents. The LDC collaborative program shows that it is possible to attain good birth weight outcomes for very high risk pregnant adolescents in spite of their multiple complex challenges.

[66] Alberta Perinatal Health Program, Provincial Perinatal Report. (2000-2004). Abridged Version released August 2006. Available at: http://www.aphp.ca/publications_links_pub.html

8.3 Breastfeeding

Breastfeeding is strongly encouraged and supported at Louise Dean Centre as an opportunity to provide babies with a healthy start. Early breastfeeding promotes psychological and physiological bonding between mother and child. Breastfeeding is associated with reduced infant mortality in preterm infants (Lucas & Cole 1990), a decreased risk of acute respiratory infections, diarrheal illness, otitis media, atopic skin disorders (Cunningham et al 1991; Lopez-Alarcon et al 1997; Dewey et al 1995; Cohen et al 1995), childhood asthma (Oddy et al 1999), and obesity (Von Kries et al 1999), and lower rates of hospital admissions (Cunningham et al 1991).[67]

Adolescent mothers may face particular challenges in embracing breastfeeding due to adolescent body image and role adjustment. Past history of sexual abuse can also impact a mother's comfort with breastfeeding.[68]

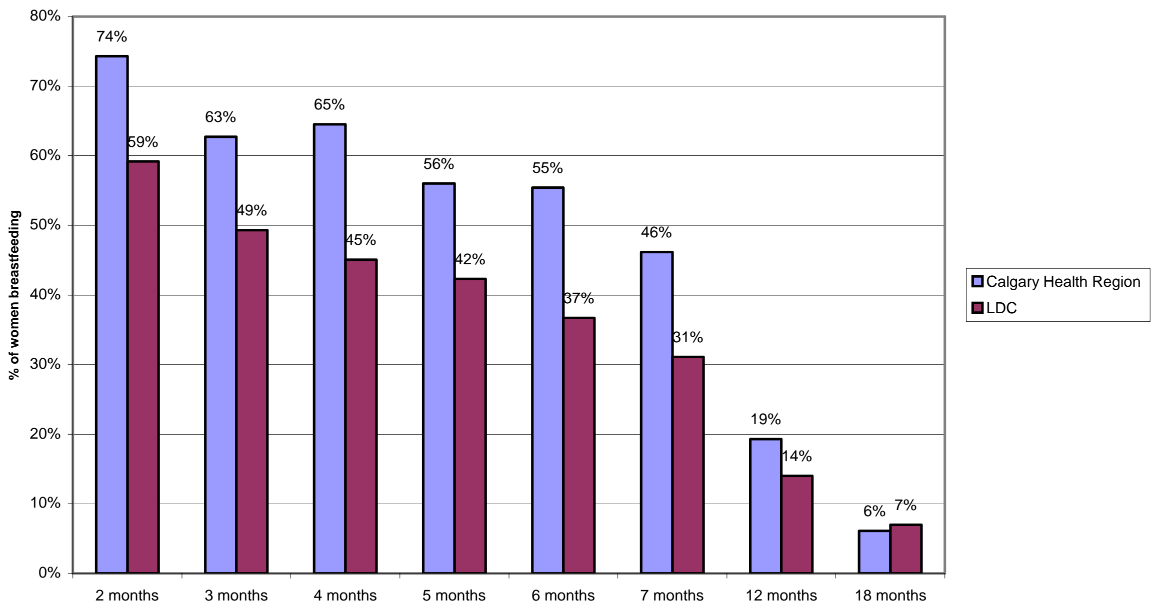
The Learning Centre (onsite child care) is extremely helpful in supporting young mothers to breastfeed their babies. Staff call young mothers out of class to the Learning Centre when their baby needs to be fed and they provide one on one encouragement and support for the breastfeeding mother. Mothers often report this opportunity to breastfeed and be near their baby as a major benefit and motivator for them to be at Louise Dean Centre.

> *Learning Staff were very good and very helpful. They helped me so I could breast feed.*
>
> *One of the things I liked about the Learning Centre was being able to breast feed, so important to me including for economic reasons.*
>
> Comments from Young Mothers

More than three quarters (76%) of the young mothers in the study reported breastfeeding their child. Although rates are somewhat lower than the average for all mothers in the Calgary Health Region, the breastfeeding rate among adolescent mothers at Louise Dean Centre is considered a significant positive achievement.

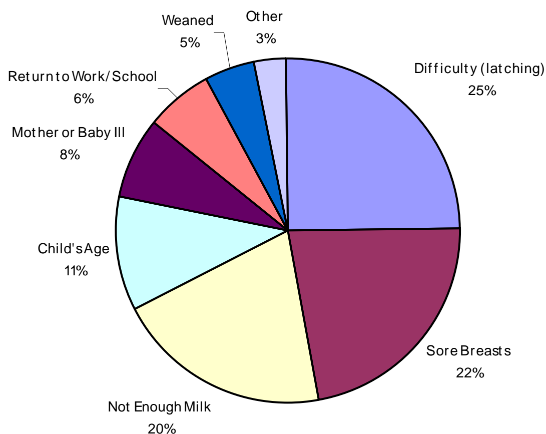
[67] CAPC/CPNP Think Tank. (2000). Factors That Contribute to Increased Breast Feeding. Literature Review. http://www.phac-aspc.gc.ca/dca-dea/publications/pdf/breastfeeding_e.pdf
[68] Kendall-Tackett, K. (1998). Breastfeeding and the Sexual Abuse Survivor. Breastfeeding Abstracts. Vol. 17 (4). 27-28.

Figure 30



The main reasons given by LDC mothers for stopping breastfeeding were because of problems such as difficulty latching, not enough milk or sore breasts.

Figure 31



8.4 Postpartum Depression

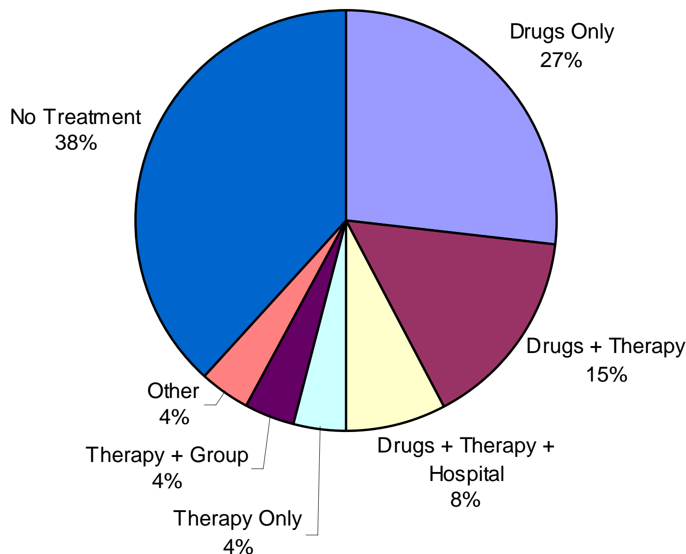
Postpartum depression can negatively affect parenting, especially for young mothers with weak personal social support systems.

Postpartum depression affects approximately 10% to 15% of the childbearing population with an average of 13%.[69] However, rates of postpartum depression in teenage mothers can be as high as 29%.[70]

A number of LDC mothers (12.6%) reported having postpartum depression after the birth of their first baby at LDC. More than one third (37%) of young mothers in the study group report experiencing postpartum depression with at least one of their childbearing experiences.

Figure 32

Postpartum Depression Treatment
N = 26 Young Mothers



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[69] O'Hara, M. Swain, A. (1996). Rates of Postpartum Depression – A Meta-analysis. International Review of Psychiatry. Vol. 8 (1) 37-54.
[70] Birkleland, R. Thompson, J.K., Phares, V. (2005). Adolescent Motherhood and Postpartum Depression. Journal of Clinical Child & Adolescent Psychology. Vol. 34 (2): 292-300.

8.4 Postpartum Depression – cont'd

It is important for mothers who experience postpartum depression to get treatment. A mother who is depressed may have trouble responding to her child in a consistently warm and sensitive fashion. This can lead to an 'insecure attachment', which can cause problems during infancy and later in childhood.[71]

Overall, a large number (38%) of the 26 LDC mothers who experienced postpartum depression with one of their pregnancies did not access any form of treatment or support services. Abrams & Curran (2207) report that "women of colour, single mothers, women of low income, and adolescents are least likely to report symptoms of depression."[72]

Postpartum depression treatment rates were somewhat better for those mothers who experienced their depression while at LDC. Among the 9 young mothers who reported postpartum depression with their first child at Louise Dean Centre, 78% received some form of treatment, with the most common treatment being drugs or drugs combined with therapy.

[71] Depression in Pregnant Women and Mothers: How Children Are Affected. Available at www.caringforkids.cps.ca/babies/Depression.htm

[72] Abrams, L. S., & Curran, L. (2007). Not just a middle class affliction: Crafting a social work research agenda on postpartum depression. Journal of Health and Social Work, 32(4), 289-296.

8.5 Early Childhood Development

One of the primary goals of the Louise Dean Centre Learning Centre is to ensure that children of high-risk adolescent mothers get a good start in life. All children are screened on a regular basis for early childhood development using the Nipissing Screen.[73] If there is any concern about the child's development a full DISC assessment is completed.[74] Those children who are identified as having possible or probable delays are referred for remedial intervention and/or worked with intensely during their stay at the Learning Centre. In many cases, children identified with delays catch up in their development prior to leaving LDC.

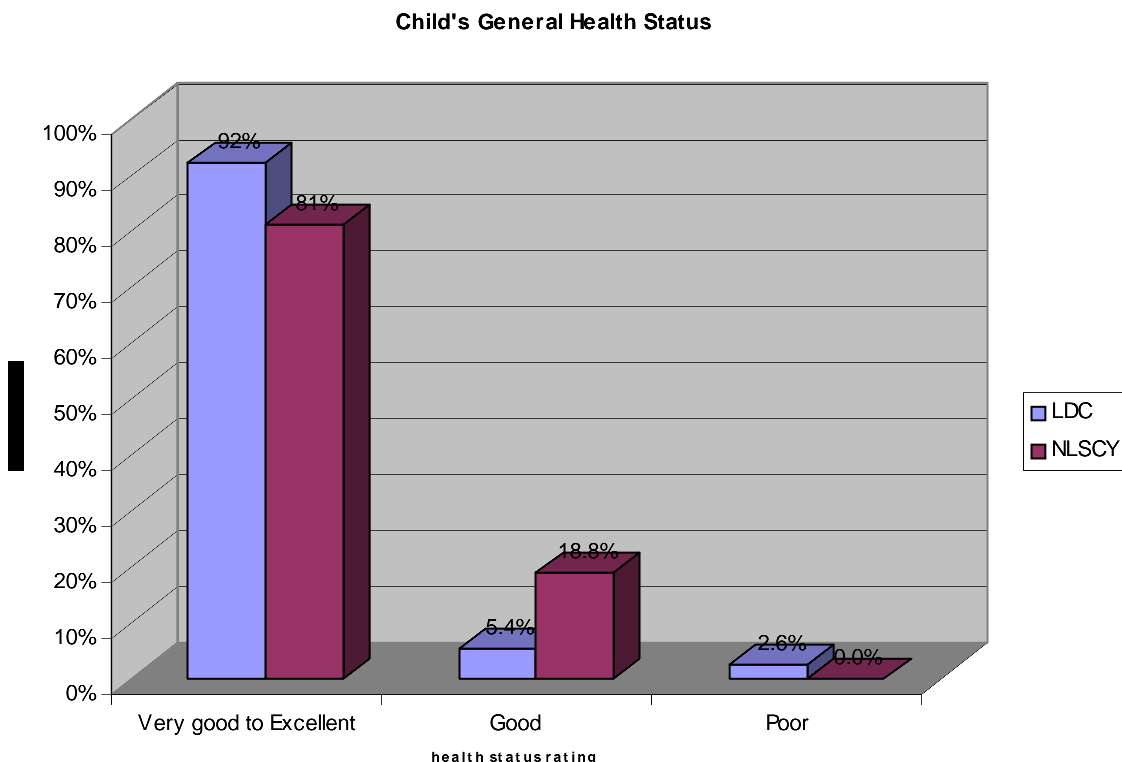
Within the study group of 74 children, 91% had no suspected delays while at LDC, and 97.1% had no suspected delays at exit from LDC. Currently five children are reported to have a suspected developmental delay and one of these children attends a special needs school in Calgary.

[73] Nippising District Development Screen. Available at: http://www.ndds.ca/home.html
[74] Diagnostic Inventory for Screening Children. Jeanette R. Amdur, Marian K. Mainland, and Kevin C.H. Parker 4th edition, published in December 1996 by Mainland Consulting Inc

8.6 Child Health

The general health status of children of LDC mothers is equivalent to the health status of children of NLSCY mothers. Almost all of the LDC mothers (92%) in the study rated their child's health as good to excellent compared with 81% of NLSCY mothers. When asked how often their child was in good health, 97% of both groups said often or almost all of the time. There was no significant difference in reports of specific health issues or chronic health problems among the LDC and NLSCY children. The occurrence of health problems within both groups was low.

Figure 33



The Public Health Agency of Canada reports that the prevalence of childhood asthma has increased sharply over the last two decades, especially from birth to age six.[75] This trend has been observed by staff in the LDC Learning Centre. There is no statistically significant difference in asthma rates among LDC and NLSCY children. However, LDC children are significantly more likely to use a Ventolin inhaler (LDC 17.1% vs NLSCY 4.5%). And children of LCD mothers did have significantly higher rates of food and respiratory allergies than the NLSCY comparison group.

[75] Toward A Healthy Future. (1999). Prepared by the Federal, Provincial and Territorial Advisory Committee on Population Health. p. 10

8.7 Childhood Obesity

Childhood obesity is of growing concern to health practitioners in Canada. Best practice guidelines from the Canadian Pediatric Association and the Registered Dieticians of Canada are followed at the Learning Centre. All staff are trained to these standards and work one-on-one with the young mothers to support them in following healthy and nutritious infant feeding behaviours.

Researchers attribute the alarming rise in the incidence of child and youth obesity to various changes in society that have created an opportunity for more sedentary behaviour and the consumption of food that is high in calories. Since 1981, the prevalence of overweight boys increased from 15 percent in 1981 to 35.4 percent in 1996, and among girls from 15 percent to 29.2 percent. During the same timeframe, the prevalence of obesity in children tripled, from five percent to 16.6 percent for boys and from five percent to 14.6 percent for girls.[76]

In 1994/95, 34% of children aged 2 to 11 were overweight, with an estimated 16% classified as obese. By 1998/99, 37% of children aged 2 to 11 were overweight, including 18% who were classified as obese. [77]

A major concern regarding childhood obesity is that obese children tend to have an increased risk of becoming overweight in adulthood and with higher morbidity and mortality rates in adulthood. Increasingly, pediatricians are seeing a rise in the incidence of type 2 diabetes, childhood hyperlipidemia, hypertension and diabetes in severely overweight children.[78]

As part of this study, children were weighed and measured. For LDC children, overweight and obesity rates were lower than the national average and lower than rates found in the NLSCY comparative group. While twice as many children in the NLSCY group were classified as “obese”, the difference between the two groups of children was not statistically significant.[79]

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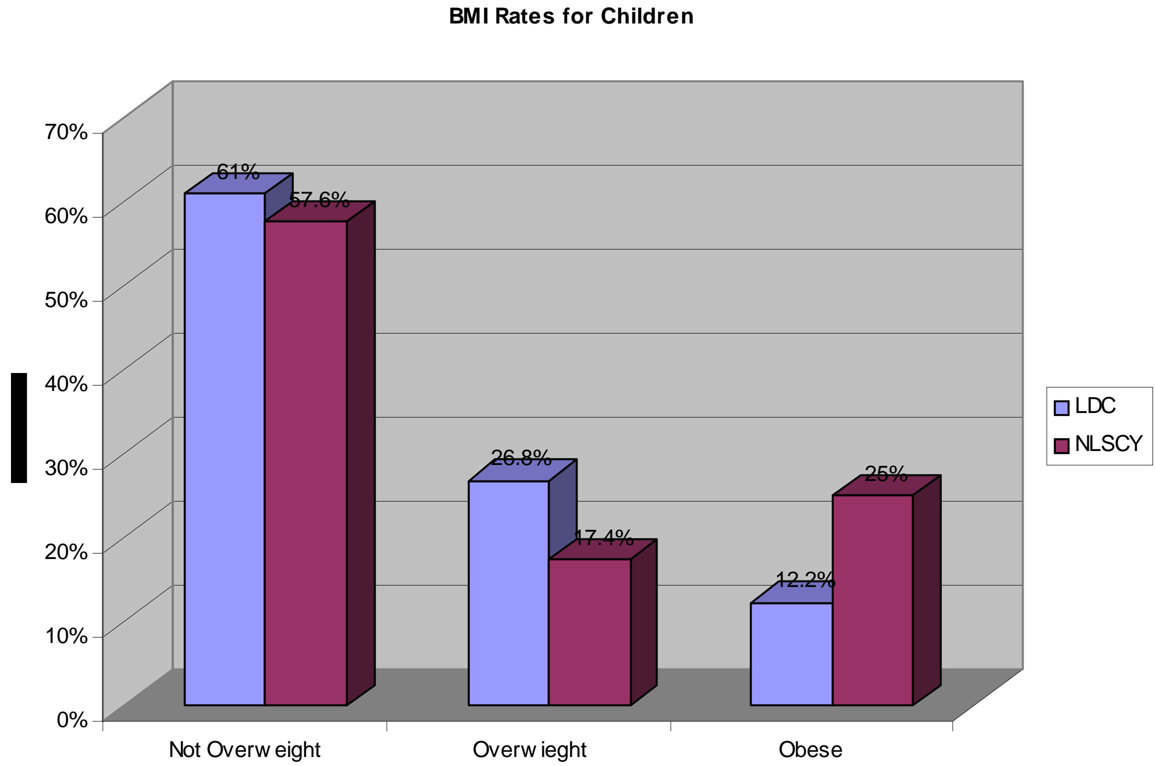
[76] Tremblay MS, Willms JD. Secular trends in the body mass index of Canadian children [published erratum appears in *CMAJ* 2001;164(7):970]. *CMAJ* 2000;163(11):1429-33
[77] Statistics Canada. (2202). National Longitudinal Survey of Children and Youth: Childhood Obesity.
[78] Ibid p. 1429-33
[79] Statistics Canada. Calculating Overweight and Obesity in Children and Adolescents. Available at: www.statcan.ca/english/research.82-620-MIE/2005001/articles/child/ccalc.htm

Figure 34



8.8 Childhood Injuries

At LDC, the Learning Centre staff emphasize child safety as they use teachable moments to support new mothers in their parenting. Learning Centre instruction includes basic child care skills (e.g. dressing appropriately for weather, use of sunscreen), child proofing the home environment and use of car seats when transporting the child. Child safety messages are reinforced with mother during parenting classes and individual interactions.

There is no statistically significant difference in injury rates among LDC and NLSCY children over the past 12 month period.

Eighty percent (80%) of injuries incurred by LDC children happened outside the home, at school, sports/recreation facilities or playground. The most common injury sustained was a cut, scrape or bruise. One child had a broken bone, one had a concussion and one had a dental injury.

Figure 35

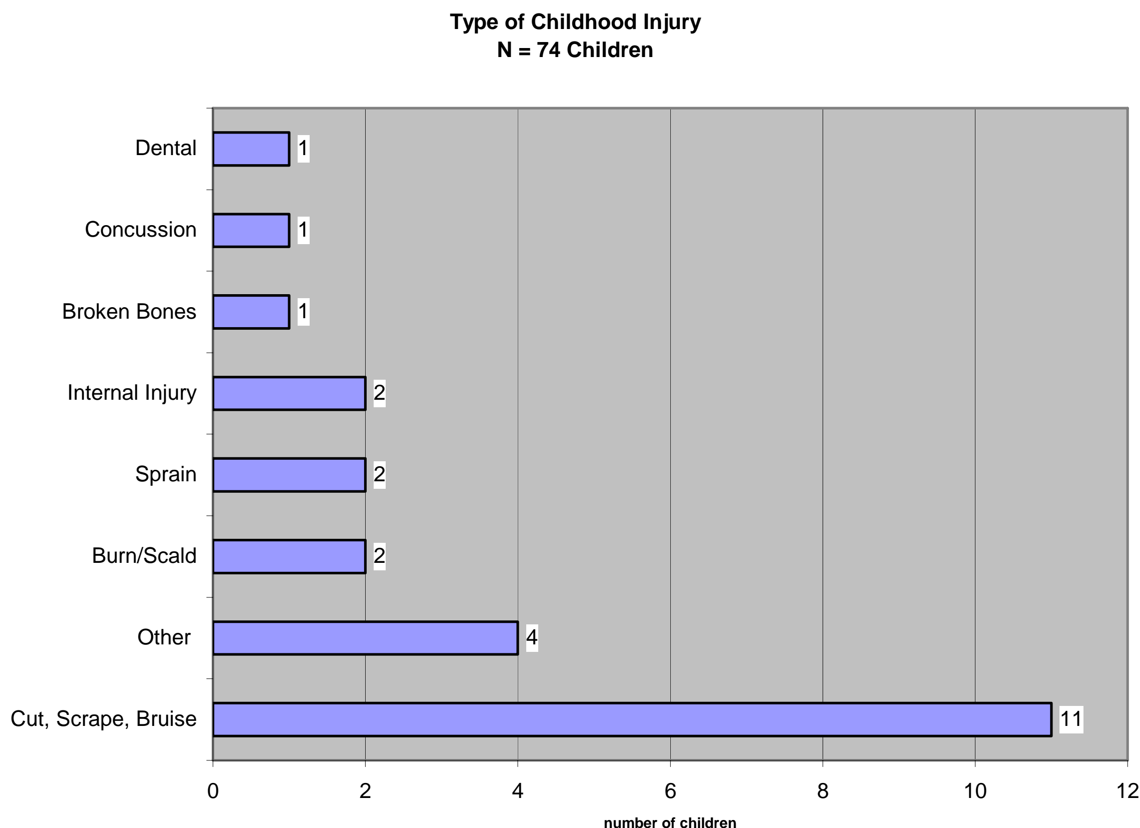
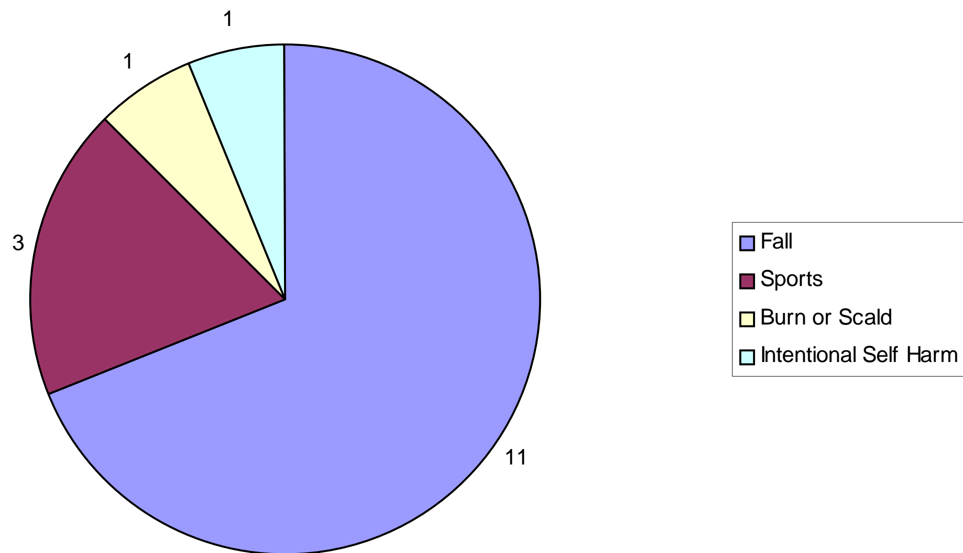


Figure 36



8.9 Child Care

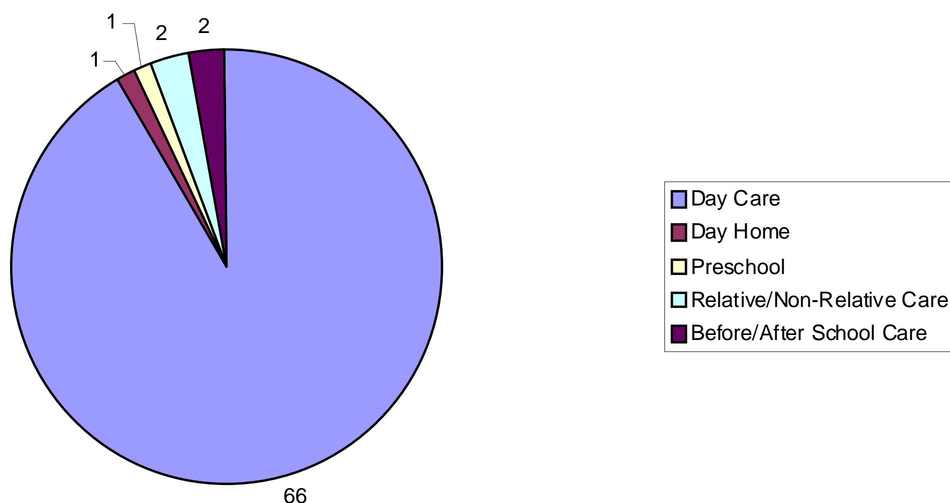
Many working mothers rely on child-care services. Stats Canada reports that in 2002-2003, 54% of children aged six months to five years were in some form of non-parental care, and these rates have been increasing.[80] Research shows that the quality of the child care is key in promoting positive child development, early learning and school readiness. Further, quality child-care can serve as a family support program, providing parents with valuable and up-to-date information on child health, development and nutrition, and how they can help prepare their children for school. It can help families, particularly those at risk, to create a more supportive and caring home environment.[81]

At LDC, Learning Centre staff teach young mothers how to choose appropriate care settings for their child. Choice of child-care can be a safety issue for children of young mothers, since without support and training, mothers may choose inappropriate informal care options.

Most LDC mothers (95%) reported using "licensed" child-care arrangements, and 91% said they were satisfied or very satisfied with their child-care.

Figure 37

Type of Child Care Used



[80] Statistics Canada. Women in Canada: Work chapter updates. Ottawa, Ontario: Statistics Canada; 2003. Catalogue no. 89F0133XIE. Available at: http://www.statcan.ca/.
[81] Early Childhood Learning Knowledge Centre. (2006). Why is High-Quality Child Care Essential? The Link Between Quality Child Care and Early Learning. Canadian Council on Learning. Available at: http://www.ccl-cca.ca/CCL/Reports/LessonsInLearning/2006

8.10 Childhood Activities

Involving children in community activities supports the development of social skills, social networks and positive peer groups. Organized activities help increase resiliency and provide positive adult influences and mentors. NLSCY research finds that "children who participate in sports and other physical activities are more likely to be ready for school than less active children."[82]

Physical activity also provides health benefits to children and is encouraged as a way of preventing obesity. Over half of Canadian children and youth aged five to seventeen are not active enough for optimal growth and development. The term "active enough" is equivalent to an energy expenditure of "at least eight kilocalories per kilogram of body weight per day".[83]

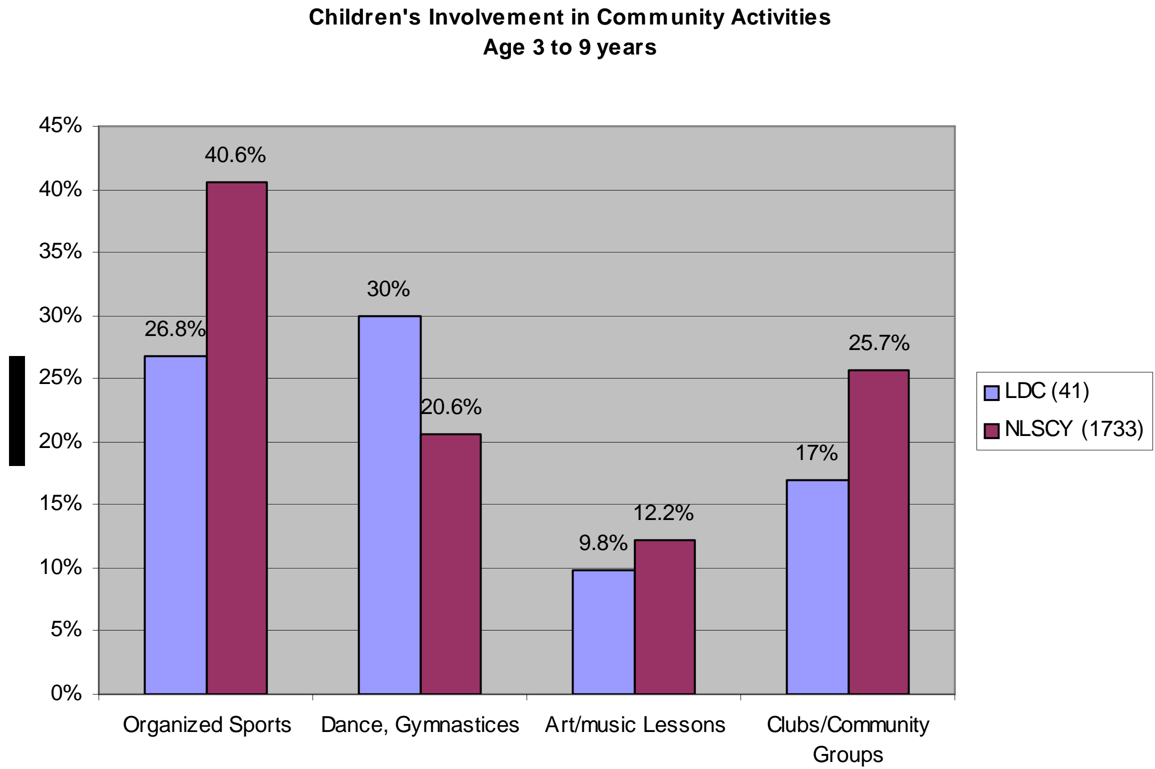
Data from the NLSCY shows a pattern of increasing participation in sports and physical activities as income levels increase, with children in lower income households participating less in sports and physical activities than their peers in the higher income groups. This gap in participation rates was most pronounced for organized sports. Researchers speculate that lower income families need to devote a large share of household income to daily necessities and may be unable to afford the registration fees, equipment costs and other expenses associated with organized sports.

Children of LDC mothers are involved in community activities at rates similar to other children. The only statistically significant difference ($p<.001$) was that LDC children are less likely to be involved in organized sports, which may be a reflection of their lower household incomes.

During their pre-school years, most of the children (85%) enjoyed other services offered in their community. The most popular children's services attended were nursery school or preschool programs (26%) and library story-time or other reading programs (23%). Some children (11%) took part in parent and child programs. A few children (3 % to 4%) participated in play groups and infant stimulation programs.

[82] Statistics Canada NLSCY (2002-2003). Are 5-year-old children ready to learn at school? Family income and home environment contexts.
[83] Canadian Fitness and Lifestyle Research Institute. (2000). Physical Activity Monitor. Retrieved at http://www.cflri.ca/pdf/e/2000pam.pdf

Figure 38

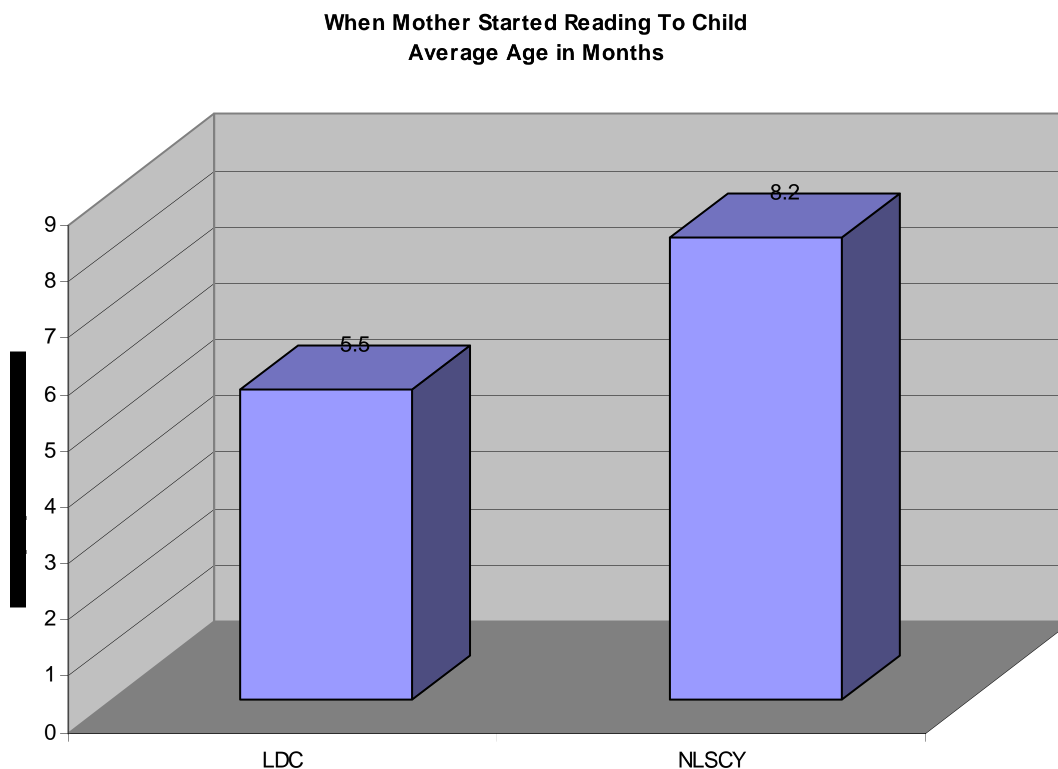


8.11 Literacy

Based on NLSCY data, researchers found that "regardless of income level, daily reading, high positive parent–child interaction, participation in organized sports, lessons in physical activities, and lessons in the arts were linked with higher scores on readiness-to-learn measures."[84]

Due to the encouragement of Learning Centre staff, mothers at LDC started reading to their children significantly earlier than other young mothers (p = .055). Sixty-two percent (62%) of mothers said they started to read to their child on a regular basis before the age of three months, and 90% of mothers are reading to their child before they are one year old. On average Louise Dean Centre mothers were reading to their child by 5.5 months of age. By comparison, NLSCY sample parents started reading to their children on average by 8.2 months.

Figure 39

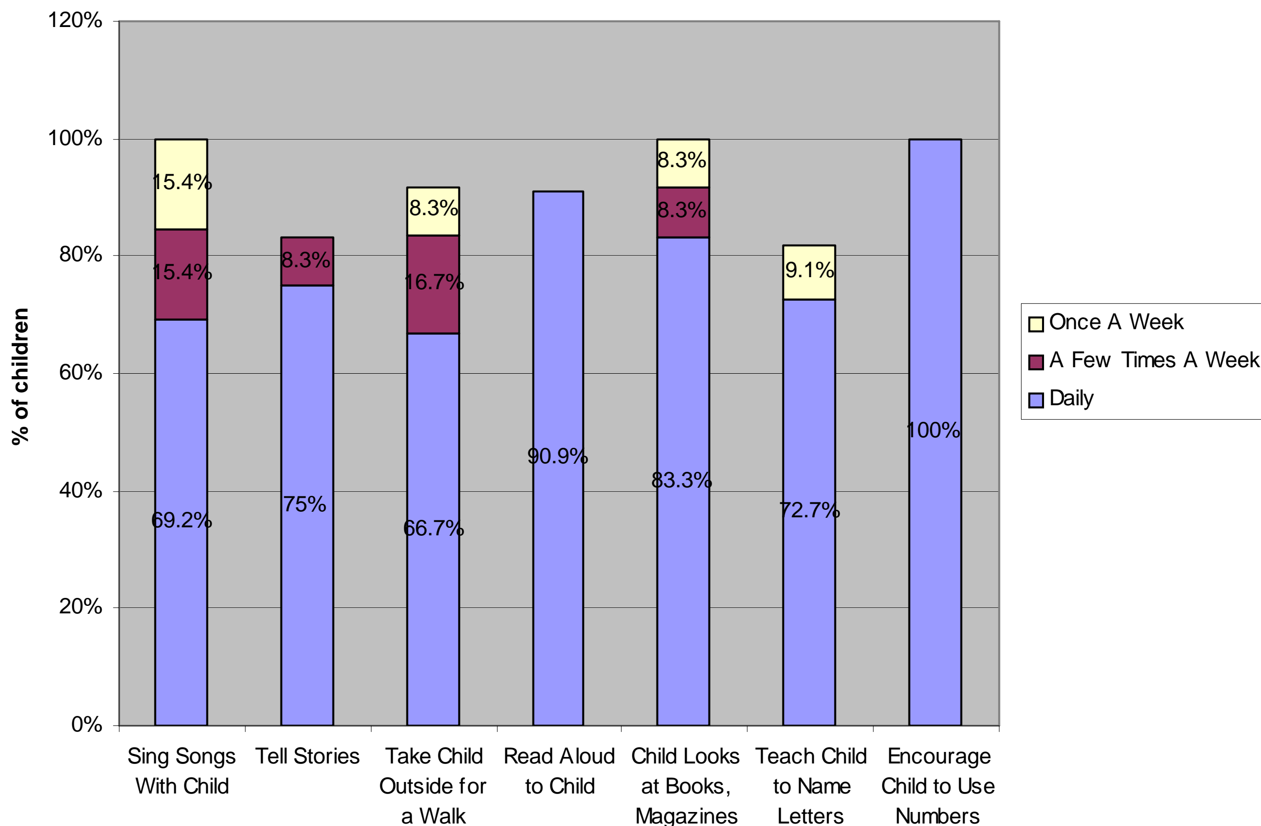


[84] Thomas, E. (2006). Readiness to Learn at School Among Five-year-old Children in Canada. Statistics Canada.

8.11 Literacy – cont'd

Young mothers from LDC were also engaged more often than NLSCY mothers in early literacy activities with their pre-school children. Many LDC mothers (63.7%) take their pre-school child to the library, on a regular basis (i.e. several times per month), and 70% of mother often do puzzles with their pre-school child.

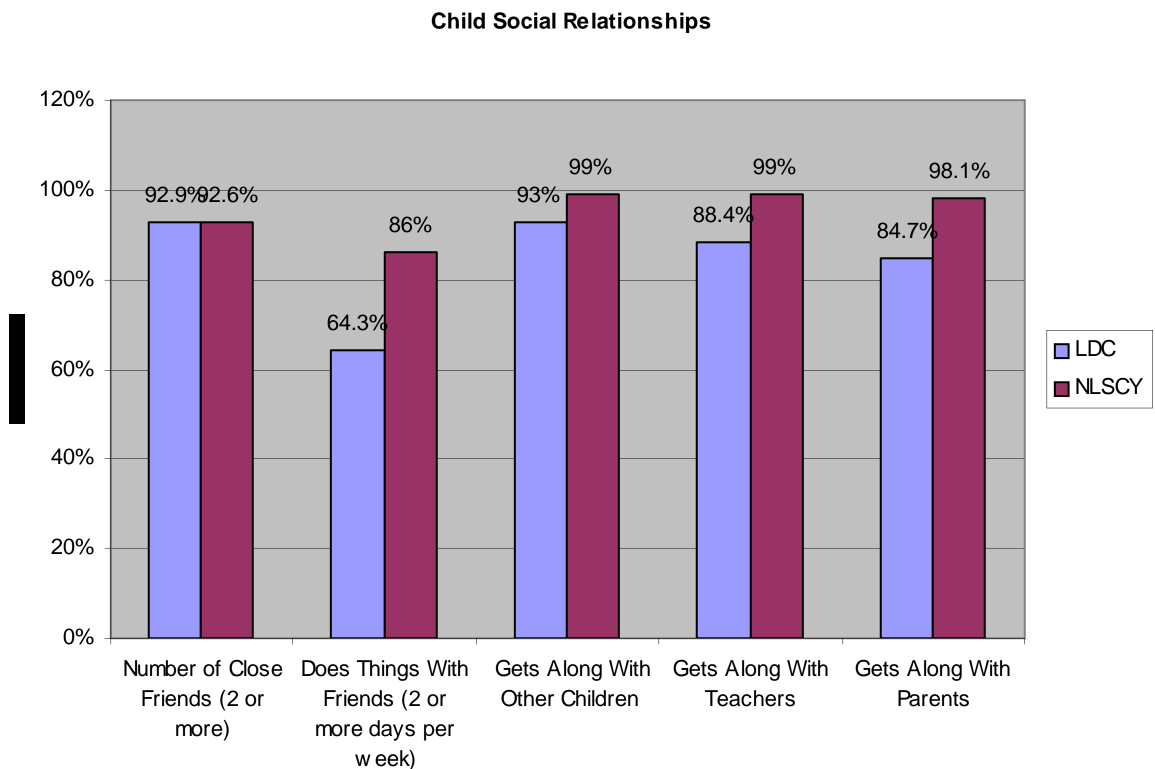
Figure 40



8.12 Social Functioning

Several aspects of child relationships were explored including getting along with peers, teachers and parents. In their number of close friends and their child teacher relationships, LDC children were no different than NLSCY children. However, children of LDC mothers were significantly more likely to report less interaction with friends (p<.001), and not getting along with other children (p<.022).

Figure 41

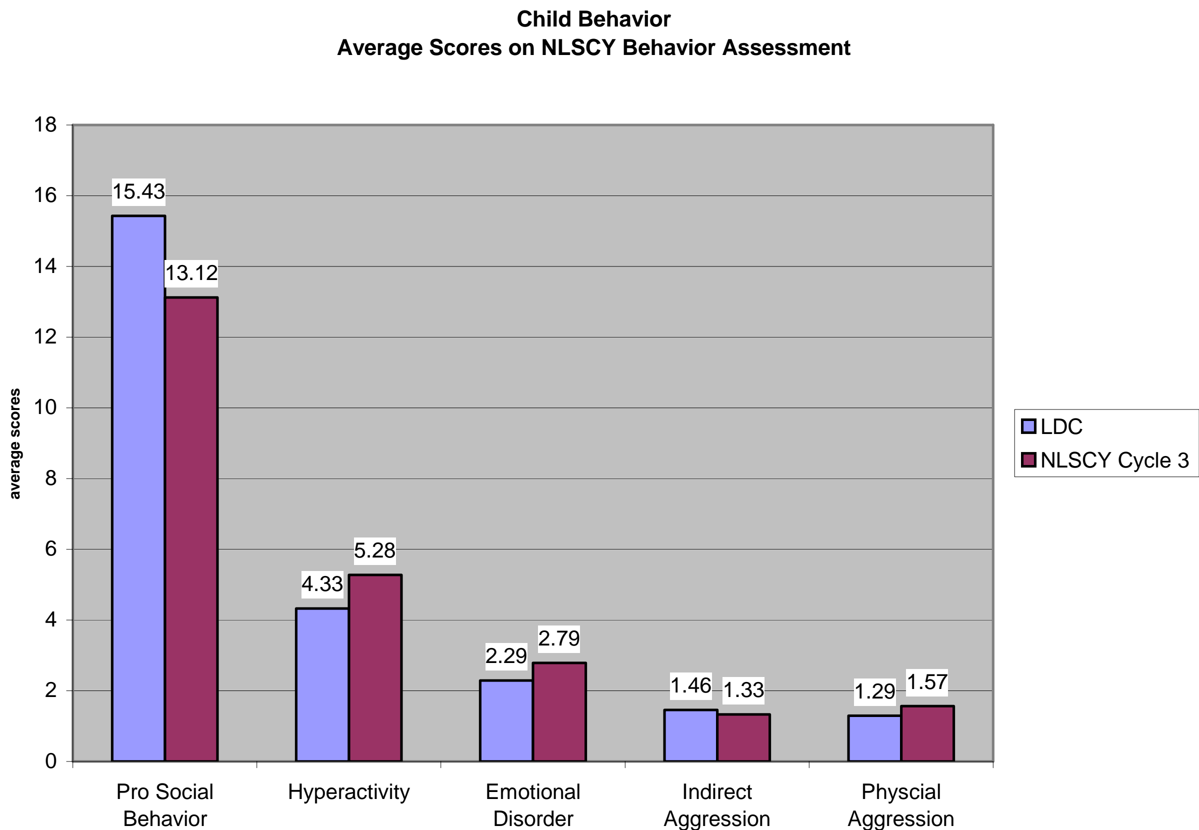


8.13 Behavior Functioning

Children were assessed using the behavior scale designed for the NLSCY. There are several different subscale assessments including Hyperactivity, Emotional Disorder, Anxiety, Indirect Aggression, Physical Aggression, Inattention and Pro-social Behavior.

Children of LDC mothers had significantly higher scores in the area of Pro-social Behavior[85]. There were no significant differences on other subscale scores even though LDC children had slightly lower scores in the area of hyperactivity.

Figure 42



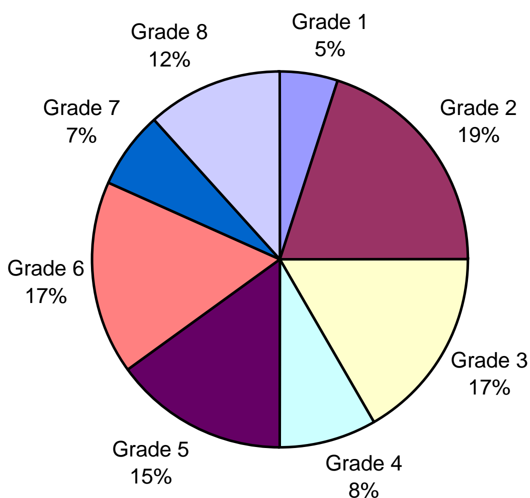
There was no statistically significant difference between the number of LDC and NLSCY children diagnosed attention deficit disorder or emotional disorders.

[85] Pro-Social Behavior means were 15.43 for LDC and 13.12 for NLSCY children. Significant difference $p<.001$

8.14 School

Most of the 73 children included in the study are school age. Sixty children were reported to be attending school. Of these children, one child attends a special needs school, and one child is in French immersion.

Figure 43



When children are absent from the school the reason is typically health related (82%). Only three families (4%) reported school absences related to problems at school. Other school absences were due to family vacations.

Over half of parents 53% say they have never been contacted by the school regarding their child's behavior. About 20% say they have been contacted once or twice, and 27% say they have been contacted about their child's behavior at least three times or more.

Parents report that 88% of the children look forward to going to school always or most of the time.

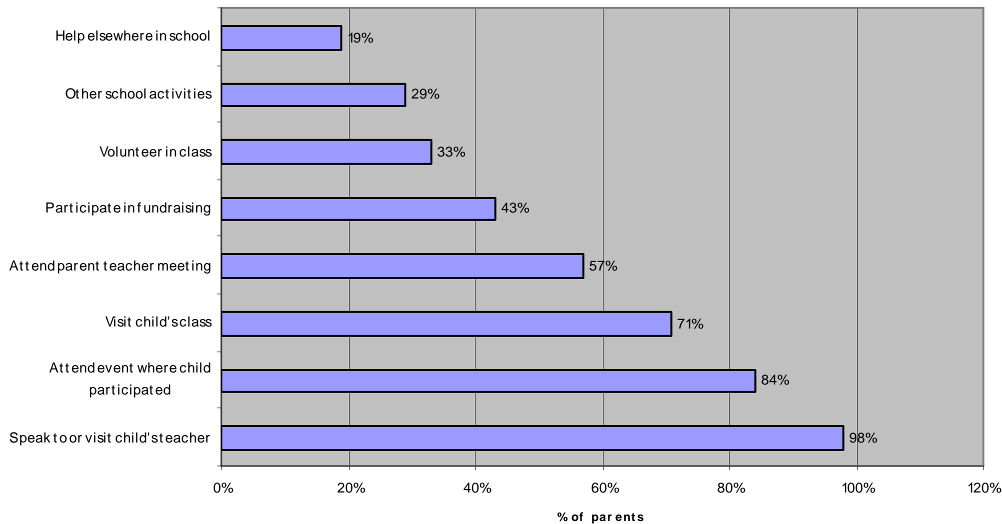
8.15 School Involvement

Strong home–school relationships matter for children's outcomes during the early childhood years, and the benefits persist over time. For example, family involvement activities such as keeping in touch with a teacher, volunteering in the classroom and attending school activities are related to children's progress in school.[86] The home–school relationship can buffer the negative impacts of poverty on the academic and behavioral outcomes of poor children.[87]

For LDC mothers involved in the study, there is good parent involvement with 91% reporting that they talk with their child about school either daily or several times a week. The other 9% say they talk with their child about school at least once a week. Ninety-one percent (91%) of parents say that it is important or very important to them that their child should have good grades in school, and 9% say that it is somewhat important.

Mothers of school age children show good levels of involvement with their child's school in a variety of ways, including visiting the child's classroom, attending parent teacher meeting, volunteering in the classroom and participating in fundraising. Only one mother reported no involvement with the school. Although school involvement levels were slightly lower for LDC mothers than for NLSCY mothers, the difference was not statistically significant.

Figure 44



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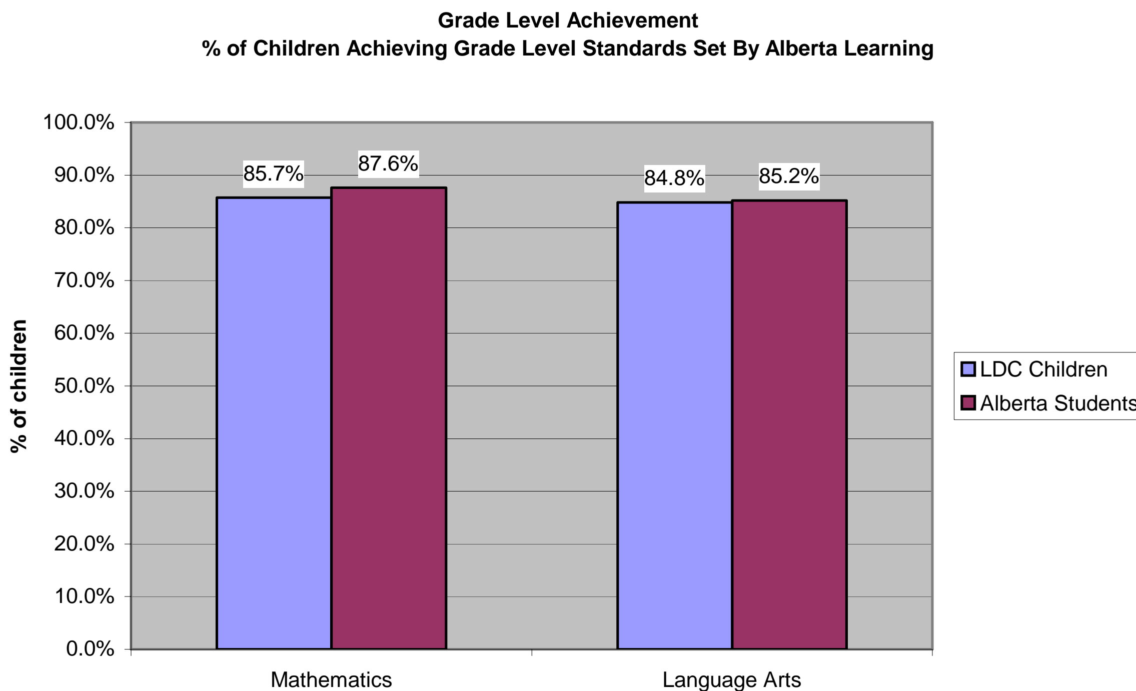
[86] Mantizicopoulos, P. (2003). Flunking kindergarten after Head Start: An inquiry into the contribution of contextual and individual variables. *Journal of Educational Psychology*, *95*(2), 268–278.
[87] Barnard, W. M. (2004). Parent involvement in elementary school and educational attainment. Children & Youth Services Review, 26(1), 39-62.

8.16 Academic Achievement

Children's academic achievement was assessed in two ways. First, parents were asked for their perception of how their child was doing in school. Secondly, children's progress in two key subject areas was measured against their peers based on their year-end "Grade Level of Achievement". Grade Level of Achievement (GLA) reporting involves teachers providing Alberta Education with their judgment of their student's achievement in meeting the Program of Studies outcomes in grades 1 to 9 language arts and mathematics. Teachers report on each child whether they are "At Grade Level" or "Below Grade Level" at the end of their school year.

Children of LDC mothers were found to be on par with their peers academically, with **84.8% of children rated as At Grade Level for language arts and 85.7% rated as At Grade Level for mathematics.** These rates were comparable to the average provincial rates reported by Alberta Learning, with no significant difference found between chidlren of LDC mothers and other school age children in Alberta.[88]

Figure 45



Parents also reported their own perceptions of how their children were doing in school. When asked about their child's overall academic performance in school, more than two thirds of parents (67%) said their child was doing well or very well, and 32% said their child's overall school performance was average.

[88] Alberta Learning. (2008). Grade Level of Achievement. 2006-2007 Pilot Data.

9.0 DISCUSSION OF BEST PRACTICES

Early pregnancy should not become a barrier to a healthy and successful family life. Louise Dean Centre partners (CFS, CBE, CHR) believe in the possibility of success for even the most high-risk pregnant and parenting adolescents. This shared vision and value system strengthens the collaborative partnership, enabling a comprehensive wrap around approach to service provision. When a collaborative center-based programming approach is used there is a synergy in the combined services that increases opportunities for success and expands potential impact in a way that the services could not achieve individually.

Key elements of a collaborative wrap around service for pregnant and parenting adolescents include health services, education, social work support and early childhood services.
This milieu service model creates a welcoming, supportive, can-do environment of female empowerment, opening opportunities for mentoring relationships to form. Feedback from study participants demonstrates how positive empowering messages and strong mentor connections can have long-lasting positive effects for young parents.

- *They inspired me to become more than what everyone expected from me, being a single mom and all.*
- *They were inspiring me to be more and making me believe I could do it.*
- *She saw something in me that I didn't see at the time.*

At Louise Dean Centre the focus of services is on the mother/child dyad. This mother/child focus permeates all service components, including the educational component. The mixed professional team approach uses their shared expertise to create the comprehensive wrap around services. For example, staff from any or all of the different professional backgrounds may be involved in providing positive lifestyle messaging, supporting pre-natal and post-natal health or teaching parenting skills.

At Louise Dean Centre collaboration is the norm. Centre staff expect and welcome collaboration with external community partners such as financial support workers, Child Welfare, AADAC[89], Best Beginnings[90] and other community health and social service programs. These community partners come on-site to offer services and become a de facto part of the milieu. Young mothers are taught to seek out and utilize community services as supports for their ongoing parenting after they leave LDC.

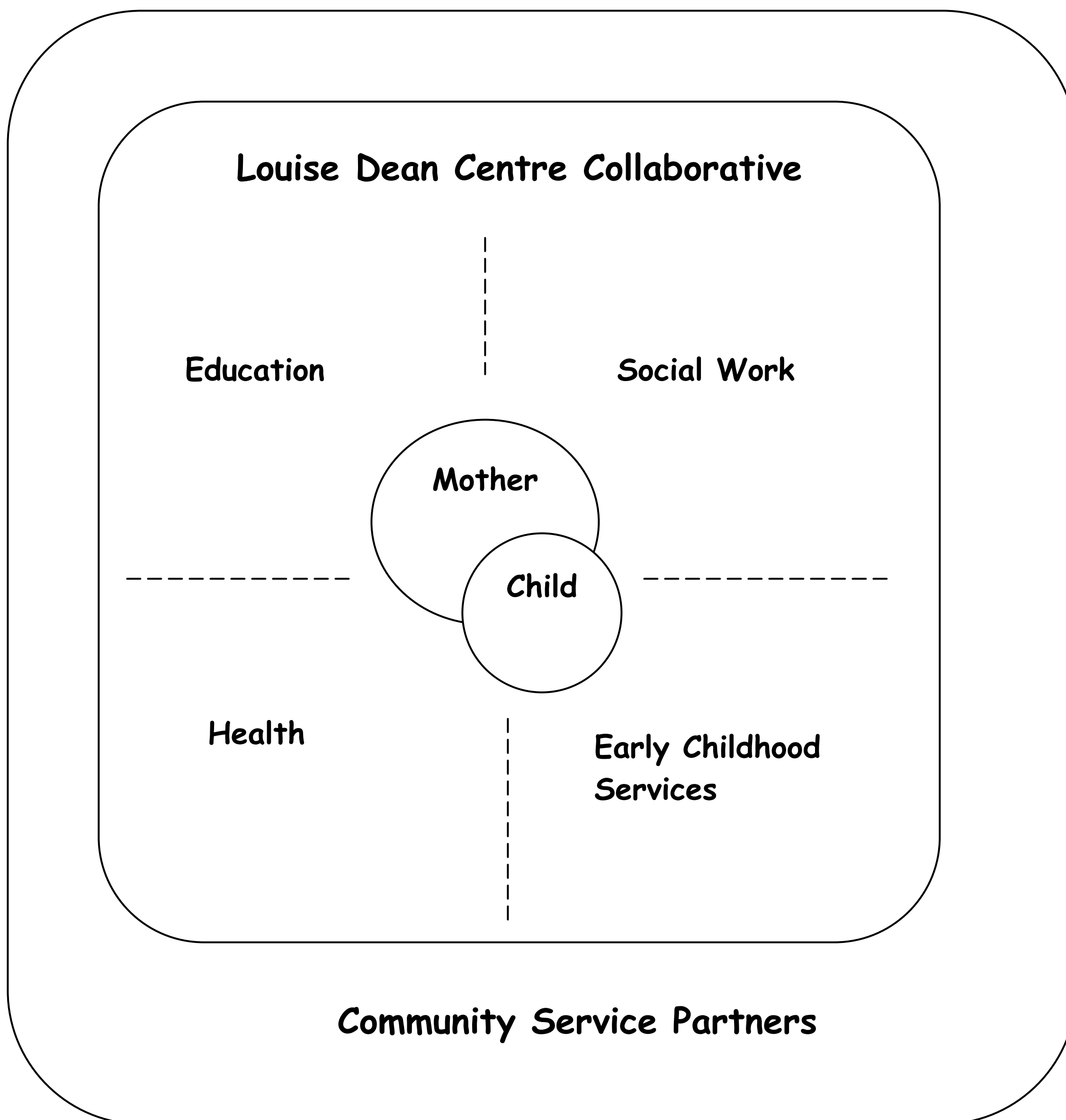
[89] Alberta Alcohol and Drug Addiction Commission (AADAC) provides educational and treatment services related to alcohol, drugs, smoking and gambling.
[90] Best Beginnings is a pre-natal program of Calgary Health Region that supports high risk pregnant women to access pre-natal education, support and Canada Prenatal Nutrition Program nutritional supplies.

9.0 DISCUSSION OF BEST PRACTICES – cont'd

Results from this longitudinal study demonstrate the long term effectiveness and impact of the collaborative wrap around service model.

Figure 46

Collaborative Centre-Based Milieu Service Model for Pregnant and Parenting Adolescents and Their Children



10.0 CONCLUSIONS

Even the most high-risk of adolescent mothers can build a positive future for themselves and their children.

The findings of this follow-up study of high-risk adolescent mothers and their children clearly demonstrate that comprehensive wrap-around services during pregnancy and early parenting can have significant mediating effects on health, socio economic status and parenting. These translate into positive outcomes for the children of adolescent mothers in both the short and longer term.

Not only did the majority of high-risk LDC young mothers not show the negative profiles typically reported by researchers, in many areas they have exceeded community norms. There were no differences in outcomes for Aboriginal parents in the study, except in the area of community involvement, where the Aboriginal parents exceeded rates of involvement reported by other young families.

Over time, the young mothers in the study did better the average young parent (NLSCY) in educational achievement and employment. In spite of their hard work and achievements, many of those young parents who are still single continue to be financially disadvantaged, a pattern that is not specific to adolescent mothers but is familiar to most lone parents across Canada.

Adolescent mothers in the study had healthy pregnancies with healthy birth weight outcomes thanks to the continuous monitoring, teaching and support of the Louise Dean Centre health programs. Early infant health continued to be supported through breastfeeding.

Given their young age when they start parenting, in many cases it takes some time for mothers to establish stable and healthy partner relationships. In more than 80% of the families, the child's biological father is not the mother's current partner. Young mothers in the study continue to have more difficulties in their general family functioning, as compared with other young parents. They are somewhat more likely to experience depression, although the difference in depression rates was not statistically significant when compared with other young mothers in the NLSCY sample.

10.0 CONCLUSIONS – cont'd

In spite of these challenges, the mothers' parenting skills are well established. Young mothers in the study started reading to their babies at a younger age, and provided care and nurturing that resulted in significantly higher scores in positive parent/child interaction.

Children in the study had excellent birth outcomes, normal childhood health and injury rates, and lower rates of childhood obesity. The children had significantly higher scores in pro-social behavior and were on par with their peers for academic achievement.

Overall, this evidence of the long term stability and success of high-risk adolescent mothers and their children validates the effectiveness of comprehensive collaborative wrap-around services for pregnant and parenting adolescents.

11.0 APPENDIX

11.1 References

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11.3 List of Abbreviations

AADAC – Alberta Alcohol and Drug Addiction Commission

CAPC – Community Action Program for Children

CACY – Calgary Achievement Centre for Youth

CBE – Calgary Board of Education

CFS – Catholic Family Service of Calgary

CHR – Calgary Health Region

CPNP – Canada Prenatal Nutrition Program

DISC – Diagnostic Inventory for Screening Children

F&ST – Families and Schools Together program

LDC – Louise Dean Centre

NCAST – Nursing Child Assessment Satellite Training Program

NLSCY – National Longitudinal Study on Children and Youth

PHN – Public Health Nurse

SES – Socio Economic Status

MAY 2008 REPORT

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