Life Course Indicator: Teen Births

The Life Course Metrics Project

As MCH programs begin to develop new programming guided by a life course framework, measures are needed to determine the success of their approaches. In response to the need for standardized metrics for the life course approach, AMCHP launched a project designed to identify and promote a set of indicators that can be used to measure progress using the life course approach to improve maternal and child health. This project was funded with support from the W.K. Kellogg Foundation.

Using an RFA process, AMCHP selected seven state teams, Florida, Iowa, Louisiana, Massachusetts, Michigan, Nebraska and North Carolina, to propose, screen, select and develop potential life course indicators across four domains: Capacity, Outcomes, Services, and Risk. The first round of indicators, proposed both by the teams and members of the public included 413 indicators for consideration. The teams distilled the 413 proposed indicators down to 104 indicators that were written up according to three data and five life course criteria for final selection.

In June of 2013, state teams selected 59 indicators for the final set. The indicators were put out for public comment in July 2013, and the final set was released in the Fall of 2013.

Basic Indicator Information

Name of indicator: Teen Births (LC-54)

Brief description: Number of live births born to women aged 10-19 years per 1,000 women aged 10-19 years

Indicator category: Reproductive Life Experiences

Indicator domain: Risk/Outcome

Numerator: Number of live births born to women aged 10-19 years

Denominator: Number of women aged 10-19 years

Potential modifiers: Race/ethnicity, age, education, income, nativity, father acknowledgement, geography, rural vs. urban, residence in foster care

Data source: National Vital Statistics System (NVSS) Birth Records

Notes on calculation: Multiply by 1,000 for rate

Similar measures in other indicator sets: HP 2020 Focus area FP-8; CDC Winnable Battle (Decrease teen birth rates by 20 percent); Title V Performance Measure #08

Life Course Criteria

Introduction

The United States celebrates continued declines in its teen pregnancy rate, however disparities, especially by race and ethnicity, persist. Through the targeted promotion of effective interventions that delay initiation of early sexual activity and increase the effective use of contraceptive methods, the Centers for Disease Control and Prevention (CDC) has deemed continued declines in teen pregnancy as a "Winnable Battle"[1] National, state, and community efforts to reduce teen pregnancy can have strong downstream impacts on the health of our nation's adolescents. Programs that target high-risk communities and address the 'whole adolescent' through positive youth development and social empowerment and take into account interrelated challenges and risk factors have the potential to reduce individual risk exposure while steering youth on trajectories for educational attainment and self-fulfillment. MCH programs and partners have numerous access points to achieve these aims; recent successes in increasing access to contraceptive methods were responsible for reducing the teen pregnancy rate in Colorado by as much as 40 percent and saving the state millions of dollars in Medicaid and social program expenditures.[27]

Implications for equity

In the United States, teen birth rates have been declining since 1990 but disparities still remain, and these disparities persist by race and ethnicity, age, region, and parental involvement.[2] In 2010, the overall U.S. birth rate was 34.2 live births per 1,000 females aged 15 to 19 years.[3] Among this age group, the number of births per 1,000 females was 55.7 for Hispanic, 51.3 for non-Hispanic Black, 38.7 for American Indian or Alaska Native, 23.5 for non-Hispanic White, and 10.9 for Asian or Pacific Islander populations.[3] Also in 2010, primary and repeat teen childbearing were typically lowest in the Northeast and highest in the South and Southwest.[4,5]

Approximately 9 percent of young men aged 12 to 16 years will become fathers before they reach 20 years of age.[6] Teen fatherhood rates also vary considerably by race. Among 15-19 year old males, 34 per 1,000 Black males and 15 per 1,000 White males became fathers in 2006.[7] Males, racial/ethnic minority groups, older teens, individuals who enter puberty early and are more physically developed, teens who abuse alcohol and drugs, and those who were sexually abused are more likely to engage in behaviors that lead to early childbearing than their counterparts.[8] On the contrary, teenagers who are engaged in school and partake in sports (among girls), religious activities, and other positive activities are less likely to engage in risky behaviors.[8]

Parent involvement has been associated with lower likelihood of teen pregnancy, potentially exposing the nearly half a million children living in foster care in the United States to greater risk of teen pregnancy.[9] Teens in foster care are 2.5 times more likely than teens outside the foster care system to become pregnant by the age of 19.[10,11] In addition to a greater likelihood of teen childbearing, children born to teen mothers are more likely to be involved with both the foster care system and the juvenile justice system.

Poverty has significant systematic effects on the occurrence and distribution of teen childbearing across different populations. Unfavorable community and family socioeconomic influences that may result from poverty and increase the risk of teen pregnancy include exposure to single-parent homes at age 14, low educational attainment of the teen's parent(s), having a mother who gave birth as a teenager, family disorganization, residence in disadvantaged communities with limited employment opportunities, availability and access to affordable and comprehensive health care, neighborhood physical disorder, and neighborhood-level income inequality.[4,12-20] Teens who reside in disinvested communities with high poverty or crime rates are more likely to engage in risky sexual behaviors and give birth than teens who live in more affluent communities.[8]

Public health impact

In 2010, teen childbearing cost U.S. taxpayers approximately $9.4 billion for increased health care and foster care, increased incarceration rates among children of teen parents, cost of public assistance, and lost tax revenue due to lower educational attainment and income among teen mothers and teen fathers.[21, 22]

Furthermore, teen childbearing is a major contributor to high school dropout rates among teenage females. Perper and colleagues[23] reported that by the age of 22 years, approximately 50 percent of teenage mothers receive a high school diploma compared with 90 percent of women who had not given birth before reaching 20 years of age.

Children of teen mothers are at high risk of having behavioral and chronic medical problems, living in poverty and in single-parent households, entering the child welfare system, relying on publicly funded health care, having lower school achievement, dropping out of high school, becoming teen mothers themselves, being incarcerated, and facing unemployment as young adults.[22]

Until recently, thorough evaluations of teen pregnancy prevention programs have been few with mixed results that depend on the type of activities targeted. In general, the most successful programs combine sexuality education with youth development activities and are initiated for adolescents at a young age.[8,24] For example, Kirby (2001) states, "the *Children's Aid Society-Carrera Program*, which includes both youth development and reproductive health components, has been demonstrated to substantially reduce teen pregnancy and birth rates among girls over a long period of time."[25]

Greater reductions in teen childbearing are expected to occur with the implementation of health care policies including the expansion of access to Medicaid family planning services and the *Patient Protection and Affordable Care Act of 2010*, which aims to improve access to and quality of health care services in the United States.[26,27] For example, in 2014, the Colorado Department of Public Health and Environment announced an unprecedented decline (40 percent) in the teen birth rate in Colorado from 2009 through 2014, with three-quarters of the overall decline being attributed to increasing access to intra-uterine devices or implants at low or no cost to low income women being served in family planning clinics.[28] The Colorado Department of Public Health and Environment estimates that with increasing access to long-acting reversible contraceptives and the associated decline in teen pregnancy, the state has saved $42.5 million in public funds in 2010 alone.[29]

Leverage or realign resources

Efforts to reduce teen pregnancy have great potential to leverage and realign resources in a variety of sectors including the education, Medicaid, social welfare, foster care and judicial sectors. High school dropout rates are higher among teen mothers than teenagers without children. By not having a high school diploma or equivalent, teen parents may change their life course trajectory toward unfavorable health and socioeconomic circumstances for themselves and their children. Given the strong association of early sexual intercourse with other risk-taking behaviors, schools have implemented and supported education and service programs such as positive youth development programs (e.g. sex education and workforce development programs) that foster resiliency in youth to help reduce school dropout rates and teen pregnancies.[24,30] Early sexual intercourse and the positive youth development approach are discussed in more detail in LC-50. In many instances these programs are the result of partnerships between schools, community organizations, and state or community maternal, child, and adolescent health programs.

In the United States, Medicaid covers the cost of more than 66 percent of deliveries among teenagers, which is greater than the percentage among women 20-24 years of age (52.8 percent).[31] To help decrease the number of unplanned pregnancies and births paid for by Medicaid, Medicaid agencies provide family planning waivers to states to enable them to serve women otherwise ineligible for Medicaid, many of whom are teenagers. As of 2013, 31 states have obtained federal approval to extend Medicaid eligibility for family planning services to individuals who would otherwise not be eligible.[32]

Many detrimental socioeconomic, behavioral, and health factors that face teen mothers and their children call for important resources and services that teen mothers may not be able to afford or access. The Maternal Infant, and Early Childhood Home Visiting program, administered by the Health Resources and Services Administration (HRSA) with the Administration for Children and Families (ACF), provides services to priority populations including teenage mothers and their children.[33,34] Home visiting, which is available to pregnant women, new mothers, and children (eligibility differs by home visiting program model) attempts to mitigate many consequences of teen births that adversely affect the teen mother and child.[33]

Children born to teen mothers are more likely to enter foster care and interact with the judicial system than other children. Furthermore, youth who have ever lived in foster care are more likely to engage in risky behaviors that may lead to arrests and teen pregnancies than other individuals. Adolescents who age out of foster care are at increased risk of experiencing several hardships including homelessness, unemployment, and criminal activity.[10] Ongoing partnerships and efforts between the foster care and juvenile justice systems along with the National Campaign to Prevent Teen and Unplanned Pregnancy have been promoted.[35]

Predict an individual's health and wellness and/or that of their offspring

Teenage pregnancy and parenting are risk factors for poor medical, education, and psychosocial outcomes for teen mothers, fathers, and their infants.[24] As described previously, teen childbearing is associated with other adolescent risk-taking behaviors, calling into importance the integration of teen pregnancy prevention programs with positive youth development opportunities. Males, racial/ethnic minority groups, older teens, individuals who enter puberty early and are more physically developed, teens who abuse alcohol and drugs, and those who were sexually abused are more likely to engage in behaviors that lead to early childbearing than their counterparts.[36] Further, teen childbearing also is a risk-factor for later disruptions in an individual's life course. While many teen mothers are able to complete high school education at a later time,[24,37,38] teens who do no return to school soon after giving birth are at much greater risk of becoming pregnant again within 15 months.[24] Teen childbearing also impacts the wellness of teenage fathers. Teen fatherhood is correlated with low educational attainment, limited earnings, substance abuse and trouble with the law. Many do not maintain a long-term relationship with the teenage mother or their child or frequently do not provide most of their child's shelter, food, or clothing.[24] Providing and collecting child support is a major issue that frequently involves the legal system.

Some of the mental health consequences of teen childbearing are also of great importance. Depression is a common occurrence for young women who bear children during adolescence.[24] Maternal depression seems to be associated with negative maternal-child interactions and subsequent behavioral abnormalities in their children, such as disruptive behavior, especially in young boys.[4] In some children, this leads to persistent negative behavior and poor school performance.[24,39-42] Children of teen mothers are also more likely to engage in sexual activity early, become teen parents themselves, and have higher than average rates of developmental delay, school failure, and substance abuse.[24,43,44]

Infants born to teen mothers are at increased risk for adverse outcomes at birth, school age, and adolescence. The outcomes include increased risk of low birth weight (and subsequently increased risk of infant mortality), childhood behavioral problems, and risk-taking behavior during adolescence.[24] Infants of adolescent mothers have an increased risk for death from intentional injury.[24,45-47] Children of adolescent mothers may also be at greater risk of unintentional injury, in part due to young mothers being less aware of potential risks or having lower maturity that may influence their perception or decision-making in the face of situations that may result in injury.[24,43]

Data Criteria

Data availability

Data on teen births are collected annually for the 50 states and the District of Columbia. These data are also available at the city and county levels. The National Vital Statistics System is an intergovernmental sharing of data whose relationships, standards, and procedures form the mechanism by which the National Center for Health Statistics (NCHS) collects and disseminates the nation's official vital statistics. Vital event data are collected and maintained by the jurisdictions that have legal responsibility for registering vital events; these entities provide the data via contracts to NCHS. Vital events include births, deaths, marriages, divorces, and fetal deaths. In the United States, legal authority for the registration of these events resides individually with the 50 states, two cities (Washington, DC, and New York City), and five territories (Puerto Rico, the Virgin Islands, Guam, American Samoa and the Commonwealth of the Northern Mariana Islands).

Vital Statistics data are available online in downloadable public use files, through pre-built tables in VitalStats, and through the ad-hoc query system CDC WONDER (Wide-ranging Online Data for Epidemiologic Research). Birth certificate data are available in WONDER for 1995-2010, and death certificate data by underlying cause of death (detailed mortality) are available for 1999-2010.

Data quality

Standard forms for the collection of the data and model procedures for the uniform registration of the events are developed and recommended for state use through cooperative activities of the States and NCHS. As reported in the NCHS publication U.S. Vital Statistics System, Major Activities and Developments, 1950-1995, efforts to improve the quality and usefulness of vital statistics data are ongoing. NCHS uses techniques such as testing for completeness and accuracy of data, querying incomplete or inconsistent entries on records, updating classifications, improving timeliness and usefulness of data, and keeping pace with evolving technology and changing needs for data. Work with state partners to improve the timeliness of vital event reporting is ongoing, and NCHS is working closely with National Association of

Public Health Statistics and Information Systems and the Social Security Administration to modernize the processes through which vital statistics are produced in the United States, including implementation of the 2003 revised certificates.

According to the National Vital Statistics Report Births: Final Data for 2011, 36 states, the District of Columbia, and two territories implemented the revised birth certificate as of Jan. 1, 2011. The jurisdictions implementing the revisions represent 83 percent of all 2011 U.S. births. The revised reporting areas are: California, Colorado, Delaware, the District of Columbia, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Mexico, New York (including New York City), North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Washington, Wisconsin, Wyoming, Puerto Rico, and the Northern Marianas. Two states, Massachusetts and Minnesota, and one territory, Guam, implemented the revised birth certificate in 2011, but after Jan. 1.

The number of teenage births as reported on the birth certificates is accurate. An Indiana study reported high agreeability between maternal age (Kappa=0.994) on birth certificates and medical records.[48] Population projections are not completely accurate, especially in counties or cities experiencing changing population numbers and characteristics. These estimates are far more reliable over time with the American Community Survey, which allows one to not have to wait every 10 years for the census. Overall, the assessment of teenage births is accurate.

Simplicity of indicator

The level of complexity in calculating and explaining this indicator is fairly low. The rate is the number of live births to females 10-19 years old per 1,000 females 10-19 years old. Data weighting, indexing, or adjustments are not required and the statistical formula is straightforward. Reducing teen pregnancy is a common focus area among professionals and communities and one that community members can understand.

Names and formula for this indicator may vary according to agency, organization, or group. Nonetheless, this measure can be relatively easy to explain. The numerator is calculated from data reported on all versions of birth certificates and the denominator from the U.S. Census projections. This measure does not require the linkage of datasets.

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References

[1] Centers for Disease Control and Prevention. (2014). Winnable Battes. http://www.cdc.gov/winnablebattles/

[2] Kost, K., Henshaw, S. & Carlin, L. (2010). U.S. teenage pregnancies, births and abortions: National and state trends and trends by race and ethnicity. Available: http://www.guttmacher.org/pubs/USTPtrends.pdf. Accessed: January 31, 2013.

[3] Martin, J. A., Hamilton, B. E., Ventura, S. J., et al (2012). Births: Final data for 2010. National vital statistics report, 61(1). Hyattsville, MD: National Center for Health Statistics. Available: http://www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_05.pdf. Accessed: February 14, 2013.

[4] Hamilton, B. E., Ventura, S. J. (2012). Birth rates for U.S. teenagers reach historic lows for all age and ethnic groups. NCHS data brief, no. 89. Hyattsville, MD: National Center for Health Statistics. Available: http://www.cdc.gov/nchs/data/databriefs/db89.pdf. Accessed: February 6, 2013.

[5] Schelar, E., Franzetta, K., Manlove, J. (2007). Repeat teen childbearing: differences across states and by race and ethnicity. Research brief number: 2007-23. Washington, DC: Child Trends. Available: http://www.childtrends.org/Files/Child_Trends-2007_10_25_RB_Repeat.pdf. Accessed: February 14, 2013.

[6] Scott, M. E., Steward-Streng, N. R., Manlove, J., & Moore, K. A. (2012). The characteristics and circumstances of teen fathers: At the birth of their first child and beyond. Washington, DC: Child Trends. Available: http://www.childtrends.org/Files//Child_Trends-2012_06_01_RB_TeenFathers.pdf. Accessed: February 14, 2013.

[7] Martin, J. A., Hamilton, B. E., Sutton, P. D., et al. (2009). Births: final data for 2006. National Vital Statistics Reports, 57(7).

[8] Manlove, J., Terry-Humen, E., Romano Papillo, A., et al. (2002). Preventing teenage pregnancy, child-bearing, and sexually transmitted disease: what the research shows. American Teen Series Research Brief. Washington, DC: Child Trends. Available: http://www.childtrends.org/files/k1brief.pdf. Accessed: March 4, 2013.

[9] Child Welfare Information Gateway (2012). Foster care statistics 2010. Washington, DC: U.S. Department of Health and Human Services, Children's Bureau. Available: http://www.childwelfare.gov/pubs/factsheets/foster.pdf. Accessed: February 6, 2013.

[10] The National Campaign to Prevent Teen and Unplanned Pregnancy (2012). Preventing teen pregnancy through outreach and engagement: Tips for working with foster care and juvenile justice. Available: http://www.thenationalcampaign.org/resources/pdf/CDC-foster-care.pdf. Accessed: February 6, 2013.

[11] The National Campaign to Prevent Teen and Unplanned Pregnancy (2009). Fast Facts: Reproductive Health Outcomes Among Youth Who Have Ever Lived in Foster Care. Available: http://www.TheNationalCampaign.org/resources/pdf/FastFacts_FosterCare_Reproductive_Outcomes.pdf. Accessed: February 6, 2013.

[12] Maynard, R. & Rangarajan, A. (1994). Contraceptive use and repeat pregnancies among welfare-dependent teenage mothers. Family Planning Perspectives, 26, 198-205.

[13] Salihu, H. M., August, E. M., Jeffers, D. F., et al. (2011). Effectiveness of a federal Healthy Start program in reducing primary and repeat teen pregnancies: our experience over the decade. Journal of Pediatric and Adolescent Gynecology, 24, 153-160.

[14] Buston, K., Williamson, L., & Hart, G. (2007). Young women under 16 years with experience of sexual intercourse: Who becomes pregnant? Journal of Epidemiology & Community Health, 61, 221-225.

[15] Raneri, L. G. & Wiemann, C. M. (2007). Social ecological predictors of repeat adolescent pregnancy. Perspectives on Sexual and Reproductive Health, 39, 39-47.

[16] Kirby, D. (1997). No easy answers. Research findings on programs to reduce teen pregnancy. Washington, DC: The National Campaign to Prevent Teen Pregnancy.

[17] Tamburlini, G. (2004). Promoting equity in health. Health Policy and Development, 2(3), 186-191.

[18] Martinez, G., Copen, C. E., & Abma, J. C. (2011). *Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2006-2010 National Survey of Family Growth*: National Center for Health Statistics. Vital and Health Statistics 23(31). Available http://www.cdc.gov/nchs/data/series/sr_23/sr23_031.pdf. Accessed: February 14, 2013.

[19] Penman-Aguilar, A., Carter, M., Snead, M. C., Kourtis, A. P. (2013). Socioeconomic disadvantage as a social determinant of teen childbearing in the U.S. Public Health Reports, Supplement, 128, 5-22.

[20] Moore, K. A., Sugland, B. W., Blumenthal, C., Glei, D., Snyder, N. (1995). Adolescent Pregnancy Prevention Programs: Interventions and Evaluations. Washington, DC. Available: http://www.childtrends.org/Files//Child_Trends-1995_01_01_ES_AdolPregPrevProg.pdf. Accessed: February 15, 2013.

[21] National Campaign to Prevent Teen and Unplanned Pregnancy (2014). Counting it up: The public costs of teen childbearing. Available: https://thenationalcampaign.org/resource/public-costs-teen-childbearing-united-states. Accessed: August 22, 2014.

[22] American College of Obstetrics and Gynecologists (2007). Strategies for adolescent pregnancy prevention. Washington, DC. Available: http://www.acog.org/~/media/Departments/Adolescent%20Health%20Care/StrategiesForAdolescentPregnancyPrevention.pdf. Accessed: February 6, 2013.

[23] Perper, K., Peterson, K., & Manlove, J. (2010). Diploma attainment among teen mothers. Child Trends, Fact Sheet Publication #2010-01: Washington, DC. Available: http://www.childtrends.org/Files/Child_Trends-2010_01_22_FS_DiplomaAttainment.pdf. Accessed: February 6, 2013.

[24] Elfenbein, D. S. & Felice, M. E. (2003). Adolescent pregnancy. The Pediatric Clinics of North America, 50, 781-800.

[25] Kirby, D. (2001). *Emerging answers: Research findings on Programs to reduce teen pregnancy.* Washington, DC: National Campaign to Prevent Teen Pregnancy. Available: http://www.catalystforchildren.org/pdf/Emerging_Answers.pdf. Accessed: March 4, 2013.

[26] Thomas, A. (2012). Policy Solutions for Preventing Unplanned Pregnancy. Washington, DC. Available: http://www.brookings.edu/reports/2012/03_unplanned_pregnancy_thomas.aspx. Accessed: February 14, 2013.

[27] English, A. (2010). The Patient Protection and Affordable Care Act of 2010: How does it help adolescents and young adults? : Center for Adolescent Health & the Law, National Adolescent Health Information and Innovation Center. Available: http://nahic.ucsf.edu/wp-content/uploads/2011/02/HCR_Issue_Brief_Aug2010_Final_Aug31.pdf. Accessed: February 14, 2013.

[28] Guttmacher Institute (2014). Game Change in Colorado: Widespread Use of Long-Acting Reversible Contraceptives and Rapid Decline in Births Among Young, Low-Income Women. Available: http://www.guttmacher.org/pubs/journals/46e1714.html

[29] Colorado Department of Public Health and Environment (2014). News Release: Colorado teen birthrate plummets. Available: https://www.colorado.gov/pacific/cdphe/news-release-colorado-teen-birthrate-plummets Accessed: August 22, 2014.

[30] National Conference of State Legislatures(2009). Teen pregnancy prevention; Making a difference for at-risk populations. Washington, DC. Available: http://www.ncsl.org/documents/health/teenpregnancy09.pdf. Accessed: February 6, 2013.

[31] Gavin, N. I., Kuo, M., Adams, E. K., Ayadi, M. F., Gilbert, B. C. (2005). Medicaid service use and program costs for pregnant teens. Expert Reviews of Pharmacoeconomics & Outcomes Research.

[32] Guttmacher Institute(2013). State policies in brief: Medicaid family planning eligibility expansions. Available: http://www.guttmacher.org/statecenter/spibs/spib_SMFPE.pdf. Accessed: February 6, 2013.

[33] Health Resources and Services Administration. Maternal, Infant, and Early Childhood Home Visiting Program. Available: http://mchb.hrsa.gov/programs/homevisiting/. Accessed: February 25, 2013.

[34] Advocates for Youth (2009). Science and success: Programs that work to prevent subsequent pregnancy among adolescent mothers. Washington, DC. Available: http://www.advocatesforyouth.org/storage/advfy/documents/sspregnancies.pdf. Accessed: February 6, 2013.

[35] The National Campaign to Prevent Teen and Unplanned Pregnancy (2009). Critical judgment: How juvenile and family court judges can help prevent teen and unplanned pregnancy. Washington, DC. Available: http://www.thenationalcampaign.org/fostercare/resources_pubs.aspx. Accessed: February 6, 2013.

[36] Manlove, J., Terry-Humen, E., Romano Papillo, A., et al. (2002). Preventing teenage pregnancy, child-bearing, and sexually transmitted disease: what the research shows. American Teen Series Research Brief. Washington, DC: Child Trends. Available: http://www.childtrends.org/files/k1brief.pdf. Accessed: March 4, 2013.

[37] Klepinger, D. H., Lundberg, S., & Plotnick, R. D. (1995). Adolescent fertility and the educational attainment of young women. Family Planning Perspectives, 27(1), 23-28.

[38] Hofferth, S. L., Reid, L., & Mott, F. L. (2001). The effects of early childbearing on schooling over time. Family Planning Perspectives, 33(6), 259-267.

[39] Leadbeater, B. J., Bishop, S. J., & Raver, C. C. (1996). Quality of mother-toddler interactions, maternal depressive symptoms, and behavior problems in preschoolers of adolescent mothers. Developmental Psychology, 32(2), 280-288.

[40] Spicker, S. J., Larson, N. C., Lewis, S. M., et al. (1999). Developmental trajectories of disruptive behavior problems in preschool children of adolescent mothers. Child Development, 70(2), 443-458.

[41] Hubbs-Tait, L., Osofsky, J. D., Hann, D. M., et al. Predicting behavior problems and social competence in children of adolescent mothers (1994). Family Relations, 43, 439-446.

[42] Hubbs-Tait, L., Hughes, K. P., Culp, A. M., et al. (1996). Children of adolescent mothers: attachment representation, maternal depression, and later behavior problems. American Journal of Orthopsychiatry, 66(3), 416-426.

[43] Committee on Adolescence (1999). American Academy of Pediatrics. Adolescent Pregnancy-Current Trends and Issues: 1998. Pediatrics, 103(2), 516-520.

[44] Substance Abuse and Mental Health Services Administration, Center for Behavioral Health Statistics and Quality (2011). The NSDUH Report: Substance use among young mothers. Rockville, MD. Available: http://www.samhsa.gov/data/2k11/WEBSR196YoungMothers/YoungMothersHTML.pdf . Accessed: February 25, 2013.

[45] Siegel, C. D., Graves, P., Maloney, K., et al. (1996). Mortality from intentional and unintentional injury among infants of young mothers in Colorado, 1986 to 1992. Archives of Pediatrics & Adolescent Medicine, 150, 1077-1083.

[46] Stier, D. M., Leventhal, J. M., Berg, A. T., et al. (1993). Are children born to young mothers at increased risk of maltreatment? Pediatrics, 91, 642-643.

[47] Buschholz, E. S. & Korn-Bursztyn, C. (1993). Children of adolescent mothers: are they at increased risk for abuse? Adolescence, 28(110), 361-382.

[48] Zollinger, T. W., Przybylski, M. J., Gamache, R.E. (2006). Reliability of Indiana birth certificate data compared to medical records. Annals of Epidemiology , 16(1), 1-10.