



# Community & Hospital Letter

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## “Unmarried” - a Risk Factor for Birth Outcomes?

In studies of topics related to pregnant women and birth/neonatal outcomes, the characteristic “unmarried” often comes up as a “risk factor” for undesirable outcomes. But, is being unmarried truly a risk factor or simply a reflection of marriage practices in today’s society? This is an extremely difficult question to answer, if it can be definitively answered.

At least 3 different national trends—a rising rate of births to unmarried women, an increasing trend of first births later in life, and an increasing trend in marrying later in life— influence whether or not a woman is married when she gives birth. Also, there is cohabitation which may or may not be a prelude to marriage and about 12.5% of all births are to women who are cohabiting (*Family Plan Perspect 2001;33: 217-233; Vital Health Stat 2002; Ser 23 #25 [www.cdc.gov/nchs](http://www.cdc.gov/nchs)*). Hispanic and non-Hispanic white women are more likely to have a cohabitation arrangement (*Child Trends Res Brief, May 2007 [www.childtrends.org](http://www.childtrends.org)*). Among unmarried birth mothers  $\geq 20$  years old, more than half give birth while living in a cohabitation arrangement. Data on the living arrangements of birth mothers in Kansas City is limited by what is captured on the birth certificate, namely married or unmarried; cohabitation information is not collected.

Nationally, childbearing by unmarried women continues to increase (*NCHS Data Brief 18, May 2009 [www.cdc.gov/nchs](http://www.cdc.gov/nchs)*). In 2007, there were 1,714,643 babies born to unmarried women, up 26% from 2002. The 2007 total was 2.5 times the number reported in 1980 and 19 times that for 1940. In 2007, only 60% of all birth mothers were married, the lowest recorded rate. And, only 62% of women are married when their first child is born. For births occurring in 2007, 27.8% of whites were not married compared to 71.6% of blacks, 51.3% of Hispanics, 16.9% of Asians, and 65.2% of Native Americans. Eighty-six percent of teenage birth mothers were unmarried

(a level that has remained fairly constant over time) as were 60% of birth mothers 20-24 years old and nearly 33% of births to women 25-29 years of age. Teenagers only accounted for 23% of births to unmarried women, down steeply from 50% in 1970.

In Kansas City, during 2007, 51.9% of birth mothers were unmarried. Between 2003 and 2007, 77.4% of birth mothers  $< 25$  years old were not married, compared to 31.9% of those  $\geq 25$  years of age. Among non-Hispanic white birth mothers 27.3% were not married; the rates for non-Hispanic blacks (77.5%), Hispanics (57.0%), and Native Americans (50.2%) were higher while the rate for Asians was lower (26.3%).

When 2007 birth data for Kansas City was examined, it revealed that 40% of all births were to women  $\leq 24$  years of age and 60% were to women  $\geq 25$  years old. However, those percentages reflected all births. To clarify the findings, only the average age at the time of a 1<sup>st</sup> births were considered and this was 24.4 years. There was variability by race/ethnicity with non-Hispanic blacks having the lowest average age at first birth (21.7 years), followed by Hispanics (22.7 years) and Native Americans (22.8 years). For non-Hispanic whites the average age at first birth was 26.6 years, while for Asians it was 27.9 years.

Another critical piece of data is at what age do women marry since the majority will marry at some point - 80% by age 40. Only among non-Hispanic blacks do fewer women ever get married than men. Therefore, it is important to examine race/ethnicity differences in women’s age when they marry for the 1<sup>st</sup> time. For this, data from the National Center for Health Statistics’ National Survey of Family Growth, Cycle 6 survey is helpful (*NCHS Data Brief 19, June 2009 [www.cdc.gov/nchs](http://www.cdc.gov/nchs)*).

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Nationally, the median age for 1<sup>st</sup> marriage for all women is 24.8 years. The probability of 1<sup>st</sup> marriage by age 20 is 17%, by age 25 51%, by age 30 73%, and by age 35 82%. Hispanic women have the highest probability for 1<sup>st</sup> marriage among women  $\leq 18$  years (10%) compared to 6% for non-Hispanic whites and 3% for non-Hispanic blacks. Starting around 25 years of age, the probabilities for 1<sup>st</sup> marriage are much higher for non-Hispanic white women. In the 25-44 year old age group, non-Hispanic white women having the highest percentage for 1<sup>st</sup> marriage (83.7%), followed by Hispanic women (76.8%) and non-Hispanic black women (56.2%). Forty-two percent of non-Hispanic black women have not married by age 35 compared with 12% of non-Hispanic white and 17% of Hispanic women. Among all race/ethnic groups larger percentages of poor women have not married by age 35 than women who are near poor or not poor. Fifty-three percent of poor non-Hispanic black women have not married by age 35 compared to 19% of poor Hispanic and non-Hispanic white women.

Of course getting married does not always equate with remaining married. Twenty percent of 1<sup>st</sup> marriages end within 5 years as do 49% of cohabitation arrangements. And, 33% of 1<sup>st</sup> marriages end within 10 years compared with 62% for cohabitations. First marriages of teenagers disrupt faster than the first marriages of women who were  $\geq 20$  years old at the time of marriage. First marriages of non-Hispanic black women dissolve at a faster rate; 47% end within 10 years compared with 34% for Hispanic, 32% for non-Hispanic whites, and 20% for non-Hispanic Asian women. Virtually all marriage separations among non-Hispanic white women (98%) end in

divorce within 6 years, compared with only 80% of separations among Hispanic women and 72% of separations among non-Hispanic black women. The likelihood that divorced women will remarry has been declining since the 1950's, when women who divorced had a 65% chance of remarrying (*Vital Health Stat 2002; Ser 23 #22* [www.cdc.gov/nchs](http://www.cdc.gov/nchs)). There is also a strong probability a 2<sup>nd</sup> marriage will end in separation or divorce (23% after 5 years and 39% after 10 years).

Given the social dynamics described above, is it possible to say whether being unmarried truly is risk factor for adverse pregnancy and neonatal outcomes? Unfortunately, there is no clear answer. Being unmarried, but living in a cohabitation arrangement, in general, does not result in significantly worse outcomes than those experienced by married women. Conversely, being unmarried and not living in a cohabitation relation quite often results in significantly worse outcomes. As presented above, too often non-Hispanic black birth mothers fall into this situation.

Therefore, the living arrangements of unmarried birth mothers appear to strongly influence outcomes. While it would be highly desirable in analyses of pregnancy/neonatal outcomes to know these living arrangements, this type of information is not available in most studies, particularly those relying on birth certificate data. Consequently, the lumping of all unmarried women, whether they cohabit or not, into a single category may actually result in an underestimation of the contribution being unmarried makes towards an adverse pregnancy/neonatal outcome.

## Malaria Continues to be Diagnosed

Modern residents of Kansas City probably would be surprised that in the early 1800s, medical authorities were very skeptical about the possibility of ever settling the Mississippi Valley because of malaria. Known as autumnal fever, because it occurred primarily between August and October, malaria was considered the American disease. Morbidity and mortality rates were very high. In Missouri, based on bills of a St. Louis physician, a Mr. P. Dorion, in July 1808, is considered the first documented case. The disease was so common along the Mississippi,

Missouri and Osage river systems that many settlements and counties periodically were abandoned. Historical descriptions of community life during the 1800s contain many illustrations of how people adjusted their activities to accommodate the "shakes". Today, in western movies there are occasional references to wagon trains getting started on the Oregon or Santa Fe trails before the annual malaria season in Independence began.

Throughout this period of settlement in Missouri, mili-

tary morbidity records for the Jefferson Barracks provide some indication of the seriousness of the problem. Admission rates for malaria were roughly 500/1,000 men from 1829-38, rising to approximately 900/1,000 men between 1878-1886, before declining to 300/1,000 men for 1889-1897. By 1924, the rate was 5/1,000 men.

The 1901 Report of the State Board of Health contained status reports on 13 counties considered malarious, including Cass and Clay. Ten of the counties were in the northern and northwestern parts of the State. During the 1920s and 1930s, the case rate in Kansas City was 0.30/100,000 population. After 1940, the disease was seldom recorded in the Kansas City Health Department records.

Today, on average, about 1.5 cases of malaria are diagnosed each year among Kansas City residents. Fifteen cases have been reported since the turn of the century and 17 cases were reported between 1990 and 1999. All these cases represented infections acquired in foreign countries.

## Potpourri

**THE PREVALENCE OF** sexually transmitted infections among sexually victimized children is <10%, even when highly sensitive detection methods are used (*Pediatrics* 2009;124:79-86). Most children with sexually transmitted infections have normal or nonspecific findings on physical examination.

**AERIAL FIREWORK DISPLAYS** are fun to watch, but breathing in the smoke may be hazardous to one's health. Fireworks can aggravate respiratory conditions like asthma. Recent studies have found that the metal salts, such as barium and strontium, that give color the displays may be a fault (*Atmospheric Environ* 2008;42:8816-8622). Barium, in particular, is known to constrict airways. Previous studies had linked use of firecrackers with asthma and bronchitis attacks.

**ON HOT SUMMER DAYS** walking down tree lined

Nationally, in 2007, there were 1,505 cases of malaria in the US (*MMWR Surveil Summ* 2009;58:SS-02). *Plasmodium falciparum*, *P vivax*, *P malariae*, and *P ovale* were identified as the causative agents in 43.4%, 20.3%, 2.0%, and 3.5% of cases, respectively; nine patients (0.6%) were infected by two or more species. Based on estimated volume of travel, the highest estimated relative case rates of malaria among travelers occurred among those returning from countries in West Africa. Twenty-four cases were reported in pregnant women; none had adhered to a complete prevention drug regimen.

Following World War II, the Centers for Disease Control and Prevention (CDC) was established to rid the country of malaria and certain other mosquito transmitted diseases. The anti-malaria campaign was highly successful, although suitable vector species of mosquitoes persisted. On occasion malaria will reestablish itself in a local area and cause illnesses among people (*MMWR Morb Mortal Wkly Rep* 2004;53:412-413). No cases of malaria acquired in the US were reported during 2007.

shaded sidewalks could be hazardous due to high levels of ozone resulting from the interaction of terpenes produced by the trees and sunlight (*Atmospheric Environ* 2009, 6/9/09, *epub ahead of print*). Urban vegetation can increase up to 50-fold the rate at which dangerous ozone is produced exceeding federal safety standards.

**A HIGH PERCENTAGE** (80%) of cats living in households across the nation are neutered and family income is the strongest predictor of whether cats were neutered (*J Am Vet Med Ass* 2009;234:1023-1030).

**ACCORDING TO THE** National Center for Catastrophic Sports Injury Research at the University of North Carolina, cheerleading is the most dangerous sport ([www.unc.edu/depts/nccsi](http://www.unc.edu/depts/nccsi)).

Catastrophic injuries are defined as any severe or fatal injury incurred during participation in the sport. Cheer-

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leading accounted for 65.2% of high school and 70.5% of college catastrophic injuries among all female sports. Cheerleading safety efforts have led to modest reductions in the number of serious injuries in recent years, but still causes more serious and deadly injuries by far than other sports.

**BETWEEN 2003 AND 2007**, 38 residents of Kansas City died by drowning. Twenty-one of the decedents were non-Hispanic whites, 8 were non-Hispanic blacks, 8 were Hispanic, and 1 was of unspecified race/ethnicity. Males accounted for 31 (82%) of the drowning victims. More than 85% of the deaths were among adults. Overall, the rate per 10,000 for drowning deaths was >22 times higher for Hispanics than non-Hispanic whites or blacks.

According to the literature, the national drowning rate among blacks is 2.3 times higher than for whites and blacks 5-24 years old account for 71% of drowning deaths in hotel/motel swimming pools (*Am J Public Health 2006;96:728-733, J Black Studies 2006;36:894-917*). It has been observed that accidental drowning increases for blacks as swimming opportunities increase, which can probably be explained by the fact that blacks do not swim as many times a year as whites. This difference in experience produces differences in ability, such as technical skill and knowledge of aquatic safety.

**THE PERCENT OF CHILDREN AND ADULTS** who are underweight has been declining, according to the National Center of Health Statistics (*NCHS Health E-Stat, July 2009, (www.cdc.gov/nchs)*). In 2003-2006, 3.3% of children and 1.8% of adults were considered underweight. In 1971-1974, the rates were 5.1% for children and 3.6% for adults. The data are from the National Health and Nutrition Examination Survey (NHANES).

**COMMUNICATION BY DOCTORS** in medical consultations often assumes that the patient has basic knowl-

edge of the body and its functioning. However, a number of studies have shown that patients do not understand the terms used by doctors and many patients do not even have a rudimentary understanding of anatomy. A large percentage of patients do not know the difference or similarity between pairs of medical terms (e.g. heart-attack and myocardial infarction; fracture and broken bone). These basic misunderstandings could have direct effects in the consultation since doctors may use anatomical and other technical terms under the mistaken belief that these will be readily understood by their patients.

A recent survey found that other than intestines, bladder and heart, more than half of patients and general public did not know the location of key body organs, even those in which their medical problem was located (*BMC Fam Pract 2009;10:43*). Across groups knowledge of the location of body organs was poor and had not significantly improved since an earlier equivalent study over 30 years ago. Education was positively correlated with anatomical knowledge and, although there was no overall sex difference, women were significantly better at identifying organs on female body outlines.

**ONLY FOUR POST-EXPOSURE** doses of rabies vaccine are needed, according to the Advisory Committee on Immunization Practices (ACIP). The ACIP's provisional recommendations call for the vaccine be given on days 0, 3, 7 and 14, eliminating the dose on day 28 ([www.cdc.gov/rabies](http://www.cdc.gov/rabies)).

The Kansas City Health Department will present its 4-day **Principles of Epidemiology** course in September. The course is free and will be taught at the Health Department, 2400 Troost, Kansas City MO 64108.

The dates are September 21<sup>st</sup>-24<sup>th</sup>.

Enrollment is limited to 16 persons.

To register send an e-mail to [Gerald\\_Hoff@kcmo.org](mailto:Gerald_Hoff@kcmo.org).

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