

## **Siblings and the Health Benefits of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)**

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### **Abstract**

The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) is a food assistance program designed to help pregnant (or postpartum) women, infants, and young children consume a nutritious diet. Benefits are distributed in the form of vouchers designed to provide participants access to the vitamins and minerals essential for their growth and development. However, food is often shared within a family and it is unclear whether the enrolled family member consumes the food(s) provided by WIC. Given the tight budget situation faced by the government and the high program administration costs, the effectiveness of the program has become an issue of considerable interest to policy makers. This paper provides an overview of the literature that examines how family dynamics impact the efficacy and efficiency of the WIC program. The available evidence suggests that there may be inefficiencies in the current system and that additional research examining family structure, benefit sharing, and health outcomes should be conducted.

**Keywords:** WIC, intra-family resource allocation, sibling effects

### **Introduction**

Societal concerns over children's health issues have grown substantially over the past several decades. During that time, the number of children who are considered to live in poor and low-income families has risen steadily — in 2011, for example, it was estimated that 45 percent of children (32.4 million children) lived in low-income families while 22 percent of children (16.1 million children) lived in poor families (Note 1). Of these children the majority are less than 12 years of age, are black or of Hispanic origin, have parents without a high school diploma or GED, live in single-parent homes, and are either uninsured or enrolled in public health insurance. These households are also more likely to be food insecure and the children residing in them are more likely to be overweight or obese, have asthma, diabetes, ADHD or other learning disabilities, and to suffer delayed development of speech and motor skills (Foster, Jiang, and

Gibson-Davis 2010; Joyce et al. 2012; Magnuson and Votruba-Drzal 2009; Seith and Isakson 2011).

These conditions are often persistent in nature and follow children throughout their adult lives. It has been shown, for example, that adults who grew up in households with low socioeconomic status have higher rates of mental illness and substance-use disorders (Gilman et al. 2002; McLaughlin et al. 2011). Those who experienced poverty as children are also more likely to have asthma, diabetes, and heart disease later in life (Magnuson and Votruba-Drzal 2009). Moreover, they face an increased risk of suffering a premature death caused by heart attack, stroke, diabetes, lung cancer, liver cancer, or stomach cancer (Cohen et al. 2010; Galobardes, Lynch, and Smith 2004; Galobardes, Lynch, and Smith 2008; Pollitt, Rose, and Kaufman 2005). To help combat these issues there are a wide variety of federally funded social welfare programs available to low-income families. The majority of these programs are targeted toward alleviating the effects of poverty and promoting the well-being of the family as a unit (e.g., the Supplemental Nutrition Assistance Program, the Earned Income Tax Credit Program, the Temporary Assistance to Needy Families Program, etc.).

Other programs, such as Medicaid, the State Children's Health Insurance Program (SCHIP), the National School Lunch Program (NSLP), the School Breakfast Program (SBP), and the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), operate with a more targeted goal in mind. These programs are focused exclusively on the health and wellness of the participant. Medicaid and SCHIP are focused on providing health insurance and affordable access to health care for low-income children. The NSLP, SBP, and WIC all provide targeted food assistance to eligible persons. Both the NSLP and SBP provide children with access to nutritious meals during the day and ease a family's budget constraint by reducing the number of meals they are responsible for providing during the school year. WIC has a broader target population and is available to pregnant/postpartum women, infants, and children under the age of 5 who live in a household with a combined family income below 185 percent of the federal poverty level, and who are believed to be nutritionally at risk.

While the aforementioned programs are all well intentioned and serve a vital role in the well-being of many citizens, the administration of these programs is costly. In 2012, for example, national budgets for these programs ranged anywhere from \$6.8 to \$74.6 billion. Given the high financial costs of these programs and the increasing demand for assistance, the efficacy of such programs has become an issue of interest to practitioners, policy makers, and researchers alike. In recent times the WIC program has drawn considerable attention due to the targeted nature of its benefit distribution, high demand for enrollment, and high per-participant costs.

More specifically, the WIC program provides food and nutrition benefits to more than half of all infants and more than a quarter of all young children and pregnant/post-partum women living in

the United States. While the program is well subscribed, the number of enrolled individuals only tells part of the story. In most years approximately 40 percent of eligible individuals go without coverage, either because they fail to recognize their eligibility or because the WIC budget for their state is already exhausted (Martinez-Schiferl 2013).

Despite high enrollment rates, WIC's selective nature renders it a relatively small program. WIC is the fourth largest food assistance program in the country (following SNAP, the NSLP, and the SBP) and has an annual budget that accounts for less than 10 percent of food and nutrition assistance funding. Although the program's total costs are relatively low, its per-participant costs are second only to those of SNAP (Note 2). In light of the high enrollment rates and per-participant program costs, the social and economic value of understanding the impact WIC has on participants and their families cannot be overstated. This paper provides an overview of the research that examines the health and nutrition benefits associated with WIC. It also provides potential avenues for future research and concludes with a call to action.

### **Participant effects**

The majority of WIC research has focused on the impact program participation has on the nutritional quality of a participant's diet and has, with few exceptions, found that WIC performs as desired. Empirical research in this area has shown that participation is associated with increased consumption of key vitamins and minerals and reduced consumption of high fat, high sugar foods. For comprehensive reviews of literature in this area see Colman et al. (2012) and Fox, Hamilton, and Lin (2004).

In 2009 the WIC program underwent a substantial revision and the prescribed food bundles were adjusted to include fruit, fresh vegetables, and whole grains. The majority of recent research has focused on the impact of these revisions and indicates that they successfully increased WIC participant's consumption of fresh fruit and whole grains (Odoms-Young et al. 2013; Whaley et al. 2012).

A logical outgrowth of the research focused on diet quality is a second stream of literature that focused on the health impacts of program participation. Despite strong evidence that WIC has beneficial effects on a child's diet, the health effects of program participation remain ambiguous. Studies by Black et al. (2004), Black et al. (2012), and Carlson and Senauer (2003) indicated that participants were likely to be in better health than similar non-participating children. At the same time, however, Black et al. (2004) found that WIC children were in worse health than children who were not eligible for program participation. Other studies by Foster, Jiang, and Gibson-Davis (2010) and Sparks (2010) failed to find a connection between program participation and a child's health.

Given the current economic climate, where families are finding it exceedingly difficult to get by and federal spending on food and nutrition assistance programs is being reduced, identifying the source of the divergent findings has become an issue of particular importance (Note 3). To this end, there has been an increase in the amount of research that seeks to explain why children's diets are improving but their health is not necessarily doing the same. One possibility may be that enrollment in the WIC program is part of an adaptive strategy adopted by low-income families and is not necessarily a response to the needs of an individual family member (Note 4).

In this case, families would find it impractical for the foods purchased with WIC benefits to be fully allocated to the participant. Instead, the food would be brought into the household and then considered a communal commodity, shared amongst all family members regardless of their WIC status. If this is the case then it is not surprising that WIC children are consuming "healthier" foods but are not consuming enough of those foods to receive a health benefit. In this event, we would expect to see that those who live in WIC households but who are too old to participate in the program are positively affected by living with a program participant.

### **Family effects**

The possibility that one person's WIC participation influences the health and wellness of their family members has been considered within the economics literature. Early research in this vein by Basiotis, Kramer-LeBlanc, and Kennedy (1998) examined a household's Healthy Eating Index (HEI) score and provided the first evidence of shared WIC benefits. Their analysis indicated that WIC families had higher aggregate HEI scores than non-WIC families. However, whether the improvement in HEI scores was driven solely by the participant or was the result of resource spreading was unclear. Later research by Oliveira and Gundersen (2000) and Oliveira and Chandran (2005) also explored the possibility of a shared WIC benefit but failed to reach a consensus. Oliveira and Gundersen (2000) found that the nutrient consumption patterns of children living in WIC households were similar regardless of their participation status, supporting the shared benefit hypothesis. Oliveira and Chandran (2005), on the other hand, offered evidence to the opposite effect. They focused exclusively on the consumption of WIC approved foods and found that participants had significantly higher consumption levels than non-participants.

In a related vein, recent studies by Ver Ploeg (2009), Robinson (2013a), and Woodward and Ribar (2012) directly explored the impact a household's WIC status had on the nutrient consumption and health of age-ineligible children (i.e., children over the age of 5). Ver Ploeg (2009) and Woodward and Ribar (2012) both examined the dietary behaviors of older children in WIC households and found evidence of benefit spreading. Robinson (2013a) focused on the overall health of older children living in a WIC household. Results indicated that teenage males received a health benefit from living in a WIC household suggesting that there was, at least to

some degree, benefit spreading taking place. These findings are consistent with the notion that WIC participation is an adaptive strategy pursued by eligible families. Additional research could provide important insight into the motivation behind the resource sharing that appears to take place within WIC households.

### **Family structure effects**

To further examine the possibility that family structure and resource distribution decisions may alter the beneficial impact WIC participation has on a child's health Robinson (2013b) considered the possibility that the presence, gender, and characteristics of a child's sibling(s) influenced the health benefits received from program participation. The results of that research indicated that an only child who participated in WIC was likely to experience an improvement in their health (over a twelve month period) while no similar effect was found for children with siblings. On the surface, this finding is troubling, as it indicates that WIC can be an effective policy tool and can bolster a child's health but that it is only doing so for a subset of participants.

Further analysis indicated that the age, gender, and number of siblings present all played an important role in determining what (if any) health benefits WIC children received. More specifically, Robinson (2013b) found that older male siblings enhanced the health benefits received by participating children, while older female and younger male siblings detracted. This additional insight suggests that it is not simply the presence of a sibling that matters but that the intra-household transactions and resource distribution decisions that take place influence how beneficial WIC is to a child.

That the sibling effects are dependent on the age and gender of the sibling(s) is not necessarily surprising, especially when viewed in the context of studies focused on the time use of teenagers. These studies focus on the types and intensity of tasks teenagers take on and often indicate that there are significant differences between males and females.

Teenage males, for example, have been found to spend more time engaged in paid work outside of the home than teenage girls (Wight et al. 2009). At the same time, the household tasks of teenagers are often divided in a gendered way, with males taking on few caregiving responsibilities and focusing primarily on household repairs and yard work (Gager, Sanchez, and Demaris 2009; Raley and Bianchi 2006). Thus, males spend more time away from the home and are unlikely to engage in activities that directly impact their younger siblings. Their familial role may result in them becoming personally and financially independent from the family (Mortimer 2003); which, in turn, would free up resources for the younger sibling(s). If this is the case, the younger (i.e., WIC) child could receive a larger share of the WIC foods brought into the house, a larger share of their family's financial resources, and more parental time and attention. The combination of these factors could lead to an improvement in the WIC child's health.

Teenage females, on the other hand, have been found to devote a greater amount of their time to working within the household—even when the hours spent working for pay are equivalent to those of a male. They also tend to engage in activities that may directly impact the health of their younger siblings, often helping the family by providing childcare and preparing meals (Dodson and Dickert 2004; East 2010; Raley and Bianchi 2006; Wight et al. 2009). Due to their young age, however, they may have limited experience caring for children and often have insufficient knowledge of nutrition and its impact on one's health (Larson et al. 2007; Slater et al. 2011). Moreover, they are a group likely to eat foods that they themselves perceive as unhealthy, commonly citing time constraints and lack of concern for nutrition as reasons for these choices (Croll, Neumark-Sztainer, and Story 2001). In their position as caregiver, their actions may directly impact their younger sibling and thus, despite their efforts to help they may be imposing a health cost on the WIC child.

Younger siblings (i.e., those between the ages of 5 and 12 years), however, are unlikely to carry as many family responsibilities and are unlikely to be able to contribute to the family's well-being. Rather, they are likely similar to the WIC child and it is likely that resource sharing between similar children is common. It is difficult to imagine a situation where a parent would deny a hungry child access to WIC foods simply because they are a few years older than their sibling for whom the foods were intended.

Another aspect of family structure that may have an important impact on the benefits children receive from their WIC participation lies in the nature of the relationship between adults in their household. This is an issue that has been largely overlooked by current WIC research but that has been examined in related contexts. Oropesa, Landale, and Kenkre (2003), for example, examined the income pooling decisions made in two adult households and concluded that married couples were more likely to pool their financial resources than other cohabitating couples. There may be similar variations in the sharing/pooling of food resources; in which case, there could be a direct connection between a WIC child's health and the relationship between the adults with whom they live.

### **Discussion and concluding observations**

The statistical analyses completed and in progress within the fields of economics and health policy provide evidence that there is a non-negligible amount of resource sharing taking place within WIC households, and that the health of WIC participants is being affected. By being statistical in nature and based on limited data, many of the studies are potentially subject to self-selection, reverse causality, and omitted variable bias, which limits their explanatory and predictive power.

Self-selection issues, for example, may exist because the WIC program is not an entitlement program and families are responsible for recognizing their eligibility and applying for participation. It is possible that families do this in a systematic way that cannot be identified by statistical data. Families who are already health conscious may be more likely to enroll in the WIC program, in which case the studies outlined above would overstate the beneficial effects of WIC participation. At the same time, families who know their children are sickly may be more likely to enroll in the program, in which case the health benefits from WIC would be understated. Regardless of whether the self-selection is positive or negative, without the ability to properly control for its presence, the results of statistical analysis may only tell part of the story.

Similarly, reverse causality could also be a concern. This form of bias would exist if a child's enrollment in WIC influenced their health while, at the same time, the child's health influenced their decision to enroll in WIC. In this case it would not be clear whether WIC participation caused a child's health to improve or changes in a child's health caused their program participation status to change. If reverse causality does exist, the results presented within the literature might over- or understate the benefits of WIC participation.

Finally, omitted variables could also create bias in statistical studies, as researchers may have lacked access to or otherwise failed to include some variables that are important factors in determining the true impact of WIC participation. This would generate biased estimates if a variable that simultaneously impacts a child's health and his or her status as a WIC participant was not included in the estimation model. If a study does suffer from omitted variable bias it is possible that results could be skewed and the impact of WIC could be inaccurately measured.

While some of the literature does attempt to address these issues and does provide valuable insights, the majority of studies are not able to fully address these concerns (Note 5). Moreover, the presence of these concerns limits the ability of these papers to explain why the divergent findings between the impact of WIC on nutrition and health outcomes exist. The literature on family and sibling effects provides a bridge toward a possible explanation but cannot provide the additional insight and firsthand knowledge necessary to guide current WIC families and policy makers to change the situation.

The possibilities described above provide a strong call for careful attention to this issue, as a one-size-fits-all solution may not be appropriate. Depending on household composition, benefit sharing (although not encouraged by the program) may be beneficial to the participant child or may be imposing an unintended harm upon them. It is imperative that field-based research be conducted to examine the intra-household decisions that are taking place and driving these effects. In turn, this research will help guide policy makers as they seek to redefine program benefits and re-tool the educational programming in a way that will allow households to maximize the benefits that WIC children receive from their program participation.

The results may also have important implications for Extension agents and professionals in the family and consumer sciences, who seek to help low-income families maximize the benefits received from program participation. Despite being against the program's targeted nature, it may, depending on a family's composition be to the benefit of the WIC participant for the family to share the foods provided by WIC. When counseling families on such matters Extension agents are encouraged to consider the family's structure, the role played by each family member, and the family's motivation for WIC participation prior to making recommendations. If an eligible individual is enrolled because he or she is nutritionally at risk, benefit sharing may be ill-advised. On the other hand, if WIC enrollment is an adaptive strategy designed to support the family and/or older male siblings are present, then benefit sharing may be appropriate.

#### Notes

Note 1: These statistics are taken from [http://www.nccp.org/publications/pub\\_1074.html](http://www.nccp.org/publications/pub_1074.html). The NCCP classifies a family as being low-income if their combined family income is between 100 percent and 199 percent of the federal poverty level (FPL) and poor if their combined family income is less than 100 percent of the FPL.

Note 2: On an annual basis SNAP, WIC, the NLSY, and the SBP respectively have per-participant program costs of \$1,596.82, \$744.32, \$397.90, and \$265.82 (data for these calculations were obtained from the Annual Summary of Food and Nutrition Services available from the FNS website <http://www.fns.usda.gov/pd/annual.htm>)

Note 3: For an overview of the budget cuts already completed and budget cuts proposed to take place by 2020 see Rosenbaum and Brynne (2014).

Note 4: For a detailed examination of adaptive strategies and their use in low-income families see Moen and Wethington (1992).

Note 5: For a detailed discussion of empirical studies that address these concerns see Colman et al. (2012).

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