The Guatemala Community Day Care Program

An Example of Effective Urban Programming

Marie T. Ruel
and
Agnes R. Quisumbing

With
Kelly Hallman
Bénédicte de la Brière
and
Nora Coj de Salazar

RESEARCH REPORT 144
INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
WASHINGTON, DC

International Food Policy Research Institute
2033 K Street, NW
Washington, DC 20006-1002 USA
Telephone +1-202-862-5600
www.ifpri.org

Library of Congress Cataloging-in-Publication Data

Ruel, Marie T.
The Guatemala Community Day Care Program : an example of effective urban programming / Marie T. Ruel and Agnes Quisumbing, with Kelly Hallman, Bénédicte de la Brière, and Nora Coj de Salazar.
p. cm.—(IFPRI research report ; 144)
Includes bibliographical references.
ISBN 0-89629-149-9 (alk. paper)
1. Day care centers—Guatemala—Evaluation. 2. Child care services—Guatemala—Evaluation. 3. Children—Guatemala—Nutrition. 4. Urban women—Employment—Guatemala. 5. Work and family—Guatemala. 6. Hogares Communitarios Program. I. Quisumbing, Ma. Agnes R. (Maria Agnes R.) II. International Food Policy Research Institute. III. Title. IV. Research report (International Food Policy Research Institute) ; 144.
HV866.G7R84 2005
362.71′2097281—dc22

Contents

Tables

Figures

Foreword

The community daycare programs currently under way in several Latin American countries seek to promote human capital formation while relieving one of the most pressing constraints faced by working parents, especially mothers—access to reliable and affordable childcare. This research report presents the results of an evaluation of Guatemala's Community Day Care program, which offers poor families a package of services to promote child nutrition, socialization, and development, under the condition that parents engage in income-generating activities outside the home.

The program was created in the early 1990s as a response to the changing needs of the growing urban population. Given Guatemala's rising rates of urbanization, the growing importance of formal sector employment, families' increased distance from relatives who could help with childrearing, and the rising incidence of female-headed households, working mothers were increasingly forced to turn to nonrelative childcare to participate in the labor force. Initially targeting urban populations, the Guatemala program later expanded to all 22 departments of the country and to both urban and rural areas. IFPRI's evaluation of the program focused on one area of Guatemala City.

Designed in collaboration with the program's administration, the evaluation assessed the program's operational performance and impact. The results of the operational evaluation, which assessed the quality of implementation and service delivery, became available in early 2000, just as a new administration took over the program. IFPRI's findings thus fed directly into the new administration's plans to strengthen the program, and the recommendations to improve the quality of the psycho-pedagogical activities and establish stronger links with the health system were adopted.

IFPRI's impact evaluation showed that the program significantly improved children's diets, especially their intake of vitamin A, iron, and zinc—essential micronutrients for physical and cognitive development and for protection from infectious diseases. The evaluation also suggested that, at least in Guatemala City, the program contributed to poverty alleviation by reducing childcare constraints and facilitating poor parents' access to formal sector jobs that offer stability and employment benefits. This was especially true for women who were the sole breadwinners for their households—a particularly vulnerable group.

The Guatemala Community Day Care program owes some of its success to its solid grounding in local realities. Programs like this, which address two mutually reinforcing objectives—in this case, ensuring adequate care of young children and allowing parents to work outside the home—have great potential for positive impact in urban areas.

Joachim von Braun
Director General
IFPRI

Acknowledgments

Funding for this research was provided by the U.S. Agency for International Development (USAID) (Project No. FAO-0100-G-00-5020-00), the Department for International Development (DfID), and the International Food Policy Research Institute (IFPRI).

The authors thank the staff from the *Hogares Comunitarios* Program for their support throughout the evaluation, especially Doris López Montenegro, then director of the program, and Eva Idee Alarcón, Marta Lidia de Montenegro, and Dr. Isabel Vicente. We also thank Lionel Chavez, who took over the direction of the program in 2000, for his assistance in organizing a symposium in Guatemala to present findings of the research. We are grateful to the following individuals for their excellent assistance in processing the data: Humberto Mendez from INCAP/PAHO and Ellen Payongayong and Wahid Quabili from IFPRI. Finally, we express special thanks to the field team for their dedicated work in particularly challenging conditions and to their excellent supervisors, Nora Coj de Salazar and Mirna Morfín, and field project director, Dr. Rafael Carranza.

Summary

Rising rates of urbanization in Latin America, the growing importance of formal sector employment, distance from extended families who can help with childrearing, and the high percentages of female-headed households have increased the demand for non-relative childcare by working mothers. With higher poverty rates among households headed by women, providing affordable and reliable childcare is crucial to women's participation in the labor force, particularly in the formal sector, where returns and benefits are higher. In 1991, the *Hogares Comunitarios* Program (HCP) was established in Guatemala City as a government-sponsored pilot program to alleviate poverty by providing working parents with low-cost, high-quality childcare. Community-based day care programs similar to this have been popular throughout Latin America but have rarely undergone a rigorous evaluation. This study by researchers at the International Food Policy Research Institute (IFPRI) was designed in collaboration with the Social Work Program of the Office of the First Lady of Guatemala and the Institute of Nutrition of Central America and Panama/Pan America Health Organization (INCAP/PAHO) and included an assessment of operational aspects and quality of service delivery, in addition to an evaluation of the program's impact on its beneficiaries.

The specific objectives of the HCP are to facilitate the integrated development of young children of working parents and to provide and promote community participation in the overall development of children. Under the program, a group of parents selects a woman from the local community to care for up to 10 children, seven years old or younger, Monday to Friday from 6 a.m. to 6 p.m, in her home. During their stay, children receive food (breakfast, lunch, and two snacks), care, affection, and hygiene and are involved in early childhood stimulation and socialization activities. The program provides the caretaker with basic furniture, equipment, educational materials, and supplies; initial training; and menus to guide food preparation. Caretakers also receive money to purchase food for the children, to purchase gas and educational supplies, and as compensation for their work. Parents are expected to complement this with a small monthly contribution and to provide monthly supplies of such basic items as sugar, toothpaste, and toilet paper.

The operational evaluation reviewed and evaluated the effectiveness of the program's implementation, the quality of its services, and the perceived satisfaction of implementers and beneficiaries, including their suggestions for program improvements. To this end, structured observations, in-depth interviews, and focus-group discussions were conducted, as well as quantitative surveys comparing groups of participating and nonparticipating households, the latter using alternative childcare arrangements.

The operational evaluation suggested that the HCP is a carefully designed, well-implemented program that is much appreciated by its users and implementers. Nevertheless, delays in receiving cash transfers for food, insufficient cash transfer amounts for food, and lack of parental participation were key operational constraints identified by the evaluation. Service provision in terms of hygiene, safety, and caretaker-child interactions was considered good overall but varied substantially across *hogares.* Caretakers consistently failed to allocate the required amount of time to educational activities, largely because of time constraints but also because they

did not feel adequately trained, motivated, or remunerated. Caretakers were generally grateful to the program for the opportunity to work at home and look after their own children (or grandchildren). Beneficiary parents were very positive about the program, appreciating the caretakers' efforts, the support they received, and the program's affordability. Their suggestions included the addition of Saturday care and increased emphasis on preventive and curative health care.

Most of the operational recommendations under this study were accepted by the new administration, which took over the program in 2000. Concrete actions taken include increasing cash transfer amounts, strengthening the provision of health services, hiring educators to ease caretaker time constraints, and building human resource capacity through training.

The program offers a number of potential benefits to its target population, including children's nutritional and developmental outcomes and school preparedness; economic benefits and improved employment opportunities for parents; and even increased educational attainment for older siblings, who no longer have to miss school to care for younger children. The main objective of the impact evaluation, however, was to assess the effect of the program on children's dietary and nutrient intakes. Other objectives were to assess the program's targeting by comparing selected characteristics of beneficiary mothers with those of working mothers using alternative childcare arrangements, and to characterize the types of alternative childcare available to poor urban dwellers in Guatemala City and compare their costs to those of the HCP.

The study's impact evaluation found a significantly better diet at the place of care among children participating in the HCP compared to those using other childcare alternatives. Children in the HCP consumed on average 20 percent more energy, protein, and iron, and 50 percent more vitamin A than nonparticipants. Moreover, their weekend diets were also slightly more nutritious than those of nonbeneficiary children. This observation confirms that parents were not compensating for the program's benefits by reducing their children's food intake at home. Nevertheless, the program's long-term impact may be weakened because of extremely high turnover among participating children. Dietary improvement only translates to improved nutritional status when maintained for a period of three to six months or more. At the time of the evaluation, more than half the participating children had been in the program for less than one year, and one-third had participated for less than three months.

The study also found that the program benefited two distinct groups of women. The first group, participating mothers, were young, often single, poorly educated, and living in precarious conditions. They were, however, significantly more likely to have formal employment (and thus access to social and medical benefits) and to earn higher average incomes than comparable mothers using alternative childcare arrangements. The second group of women comprised the caretakers, who were generally older and less educated, and had fewer opportunities to work outside the home. Hence, the program was reaching its target audience, and recipients were obtaining better and more stable jobs than otherwise would have been possible. It should be noted, however, that the program's coverage was very low. Despite offering one of the cheapest childcare programs in the area, only 3 percent of eligible households took advantage of the HCP. Although a significant proportion of non-users preferred that their children be taken care of by family members, close to half of the working mothers interviewed expressed interest in the program but were precluded from participating due to lack of available space.

The positive overall assessment of Guatemala's HCP attests to the value of such programs in providing high-quality, affordable childcare, while enabling poor working parents, especially single mothers, to pursue stable urban employment. Although certain steps have already been taken to strengthen the program, expanded coverage and increased duration of participation per child would offer considerable further potential toward reducing urban poverty, food insecurity, and child malnutrition.

CHAPTER 1

Introduction

Background and Rationale

High urbanization rates in Latin America are accompanied by an increase in women's participation in the labor force (Ruel 2000). In Guatemala, the number of urban women working for income rose from 23 percent in 1990 to 28 percent in 1999 (World Bank 2001). While the majority of working women (61 percent of the female labor force in Guatemala) holds jobs in services, opportunities in manufacturing and other industrial employment such as electronics, apparel, food processing, and other export industries are increasing (World Bank 2001). This shift in the structure of urban production results in greater employment opportunities for women, but in settings that are not amenable to taking children along. Affordable and reliable childcare therefore becomes critical, especially in urban areas, where extended family networks to assist with childcare tend to be more limited than in rural areas. The scarcity of childcare options may thus represent a major obstacle to achieving household livelihood and food security among urban women, especially women heads of households (Deutsch 1998).

The *Hogares Comunitarios* Program (HCP) was established in Guatemala City in 1991 as a direct response to the increased need for alternative childcare. The government-sponsored pilot program was designed as a strategy to alleviate poverty by providing working parents with low-cost, quality childcare within their communities. The program's stated ultimate aim is to promote child development and to fill the existing gap in preschool education in Guatemala. Thus, the focus is on the child and his or her family, and on achieving the mutually reinforcing goals of promoting child development while supporting household livelihood strategies.

The HCP model is highly popular in Latin America. Many countries, such as Peru, Colombia, Bolivia, and Venezuela, and most countries of the Central American region have an ongoing home-based community childcare program that uses a model similar to that of the HCP. The programs differ in size—Colombia having the largest number of beneficiaries (close to 1 million) and Guatemala the smallest (approximately 10,000 children)—and in cost and financing modalities (Young 1995; CGECCD 1997; van der Gaag and Tan 1998), but most receive government support. The programs also may differ in certain modalities and operational aspects, but they generally offer the same basic package of services: food, education, early child stimulation, care and affection, and hygiene. The programs also share the same dual goals of promoting child development and facilitating the involvement of poor parents in income-generating activities outside the home.

In spite of their popularity in the region, very few of these community daycare programs have been evaluated. Many of them, including the Guatemala HCP, have survived several changes in government, and seem to be there to stay. It is thus important to understand whether

these programs are achieving their objectives and whether they are improving the lives of poor preschool children and their families.

Purpose of this Research Report

This research report specifically addresses the question of whether the Guatemala HCP is an effective program and whether it achieves its main goal of improving young children's diets and nutrition while allowing poor parents to engage in income-generating activities.[1] A secondary objective is to assess whether the program is reaching its targeted population, that is, poor working parents, and especially women heads of household. The findings described are from an evaluation of the HCP program conducted in 1998–1999 in urban slums of Guatemala City. The research was a collaboration between the International Food Policy Research Institute (IFPRI), the Guatemala First Lady's Social Works Program of *Hogares Comunitarios,* and the Institute of Nutrition of Central America and Panama/Pan America Health Organization (INCAP/PAHO). The overall goal of this collaborative effort was to assess the impact as well as the operational performance of the HCP, with a focus on identifying areas that could be strengthened through the collaboration.

The evaluation included two main components. The first was an operations (or process) evaluation, which aimed at assessing the operational performance of the program, more specifically the efficiency of service delivery, the quality of services, and the perceptions of program users and key implementers regarding the usefulness and quality of the program. The second component was an evaluation of the impact of the program on beneficiary children and their families.

Structure of the Report

The report is structured as follows. Chapter 2 provides a brief overview of urbanization and poverty in Guatemala, with a focus on the livelihoods of urban women. It is followed by a description of the program's objectives, design, and cost structure (Chapter 3). A brief overview of the evaluation study design and research methods follows (Chapter 4). The next two chapters describe the operational evaluation of the HCP; the conceptual framework, objectives, design, and methods of the evaluation are presented in Chapter 5, and the key findings are in Chapter 6. The two chapters on impact evaluation use the same structure: conceptual framework, design, and methods (Chapter 7), followed by a chapter on the main findings (Chapter 8). The report concludes with a brief summary of the results and a discussion of the implications of the findings for urban programming.

[1]Note that, because of data limitations, the study could not directly assess the impact of the program on maternal labor force participation (see Chapter 7).

CHAPTER 2

Women and Urban Poverty in Guatemala

Country Overview

In 1998, when our study began, Guatemala had a per capita gross national product (GNP) of US$1,788. Guatemala was also the largest economy in Central America, accounting for about one third of the region's gross domestic product (GDP). The economy was predominantly agricultural, with more than half of the labor force engaged in farming, forestry, and fishing. For much of its recent history, Guatemala has enjoyed relative macroeconomic stability and reasonable growth (World Bank 2003).[2] Growth averaged about 3.9 percent from the 1950s to the 1990s. The exception occurred during the 1980s, as a result of the civil war and the unfavorable international economic environment, when growth rates dropped to 1 percent per annum. Led by an investment recovery and strong exports (ECLAC 1997), growth rebounded in the 1990s, averaging 4 percent, which is slightly higher than the average for Latin America at the time (3.4 percent per annum). Tax revenues had increased as a result of the tax reforms ushered in as part of the 1996 Peace Accords. A rise in export volumes was fueled by strong demand for sugar and coffee, robust *maquila* (textile and small consumer good industries) exports, and expanding markets in Central America (IDB 1996). However, with one of the highest population growth rates in the region (2.6 percent from 1980 to 1999), per capita growth rates were significantly lower, averaging 1.3 percent per annum over the past 50 years.

Despite these upturns, Guatemala remained a sharply segmented society, with highly skewed distributions of income and land. The country had the third highest degree of income inequality—exceeded only by Brazil and Pakistan—among low-to-middle-income countries worldwide. The poorest 20 percent of the population held only 1.9 percent of total income (World Bank 1998). Guatemala also had the lowest schooling coverage in Latin America, except for Haiti. Education spending was among the lowest in the region—1.8 percent of GDP compared with a regional average of 4.0 percent. In fact, overall public spending in the social sectors, defined as education, health, social security, and housing, was extremely low at around 4 percent of GDP in 1994–95, compared with the regional average of approximately 14 percent (ECLAC 1997).

Infant mortality in 1999 was 40–45 per 1,000 live births, compared to the average of 30 for the Latin America and Caribbean (LAC) region, and life expectancy was 65 years, compared to the LAC average of 70 (World Development Indicators 2000, in World Bank 2003). Approximately 16 percent of infants suffered from low birth weight,[3] and the prevalence of

[2]This section draws heavily on World Bank (2003).

[3]Note that this is likely to be an underestimate of the actual percentage because a large proportion of births in Guatemala are attended at home by midwives. Birth weight data on these nonhospital births are not available, but

stunting among children younger than five years of age was as high as 46 percent nationally (INE 1999). These rates of childhood undernutrition are not only far higher than those of other countries in the region, but are also among the highest in the world. In the western part of the country, a region mostly inhabited by indigenous populations, the prevalence of stunting reaches almost 75 percent.

Recent estimates show that poverty and inequality continue to be serious causes for concern in this country. In 2000, more than half of all Guatemalans—56 percent of Guatemalans or 6.4 million people—lived below the poverty line, defined as the yearly cost of a "food basket" that provides the minimum daily caloric requirement of 2,172, plus an allowance for nonfood items (Table 2.1) (World Bank 2003).[4] Poverty rates rise to 65.6 percent if income, rather than consumption measures, are used. Whether computed using the consumption or the income measure, poverty rates in Guatemala are higher than in other countries of Central America, and much higher than the Latin American average. Poverty is also very much a rural phenomenon: 74.5 percent of the rural population is poor, compared to 27.1 percent of the urban population, using consumption measures. The depth of poverty, or the amount needed to bring all poor individuals up to the poverty line (or P1; see footnote to Table 2.1), is highest in Guatemala, and, reflecting the inequality of distribution even among the poor, so is the severity of the poverty index (P2; see footnote to Table 2.1). With the slowing of Guatemala's economic growth rates in recent years, reflecting a series of economic shocks as well as the high rate of population growth, projections from the World Bank suggest that poverty rose slightly from 56.2 percent in 2000 to 56.6 percent in 2001. Moreover, inequality remains high, although it has decreased from the levels found in the early 1990s (Londoño and Székely 1997). Based on consumption measures, the Gini ratio in all of Guatemala was 48 percent in 2000 (World Bank 2003), with a higher Gini ratio of 44 percent in rural areas and 35 percent in urban areas. Based on income measures, the overall Gini ratio was 57 percent, 54 percent in urban areas and 47 percent in rural areas.

Urbanization and Poverty at the Time of the Study

In the mid-1990s, Latin America was the most highly urbanized region of the developing world, with 75 percent of the population living in urban areas and a projected 82 percent by the year 2025 (UNCHS 1996). The rate of urban population growth in Guatemala between 1990 and 1998 exceeded the average growth rate for the region: 2.8 percent versus 2.0 percent (IDB 1996).

Rapid urbanization in Guatemala was accompanied by an increase in the number of urban poor and in the percentage of urban residents living in poverty (Ruel 2000). In 1989, 54.8 percent of the urban population was at or below the poverty line of US$2

---

are likely to include higher percentages of low-birth-weight babies than hospital births because they occur disproportionately more among the poorest segments of the population.

[4]In the World Bank's poverty assessment, the nonfood allowance was calculated as the average nonfood budget share for the population whose food consumption was around the amount needed to satisfy calorie requirements, Q 1,912 (Q = quetzal; exchange rate at the time of this study was approximately 6 quetzales for $1.00). The cost of satisfying minimum caloric requirements was defined as the Extreme Poverty Line (XPL). It was assumed that, since these individuals barely meet the minimum caloric requirements, whatever share of total consumption they allocate to nonfood must be essential. The analysis found the nonfood share for this group to be US$56. This method yields a full poverty line (FPL) of Q 4,319, below which individuals would be considered poor. In "dollar per day" terms, the full poverty line translates to about US$1.51 per day, midway between the "poor" and "indigent" poverty lines used in the Londoño and Székely study.

Table 2.1 Poverty indicators by welfare measure, Central America comparisons

	Percentage all poor (below FPL)			Percentage extremely poor (below XPL)			GNI per capita, PPP
	Poor[a]	Depth[b]	Severity[c]	Poor[a]	Depth[b]	Severity[c]	
Using consumption as welfare measure							
Guatemala (2000)	56.2	22.6	11.7	15.7	3.7	1.3	3,630
Urban	27.1	7.8	3.3	2.8	0.6	0.2	n.a.
Rural	74.5	32.0	17.0	23.8	5.7	2.0	n.a.
Nicaragua (1998)	47.9	18.3	9.3	17.3	4.8	2.0	2,060
Panama (1997)	37.3	16.4	9.7	18.8	7.7	4.2	5,450
Using income as welfare measure							
Guatemala (2000)	65.6	35.1	25.9	31.9	15.1	22.2	3,630
Nicaragua (1998)	55.1	26.2	16.0	29.9	12.2	6.6	2,060
Panama (1997)	42.1	22.8	17.1	26.2	14.2	13.3	5,450
Honduras (1996)	62.9	33.4	22.3	35.0	16.3	10.6	2,270
LAC average (1996)	36.7	16.9	10.7	16.1	7.4	5.1	6,620

Source: World Bank (2003).

Note: LAC, Latin America and the Caribbean.

[a]Incidence of poverty or headcount index P0 (percentage of population whose total consumption or income falls below poverty line, full poverty line [FPL], or extreme poverty line [XPL]). All poor includes extremely poor.

[b]The poverty depth index (P1) represents the amount needed to bring all poor individuals up to the poverty line, expressed as a percentage of the poverty line taking into account the share of the poor population in the national population.

[c]The poverty severity index (P2) is a measure of the degree of inequality among the population below the poverty line.

per day, and 28.0 percent was at or below the indigency line of US$1 per day. Both figures had risen from their 1980 levels of 41.0 and 13.0 percent, respectively (ECLAC 1995). Furthermore, these levels and their increases were much higher than Latin American averages (30 percent below the poverty line of US$2/day in Latin America in 1986) (ECLAC 1995). In absolute terms, the urban poverty index in Guatemala rose 13 percentage points during the 1980s, compared with an overall rise in Latin America of 9 points; the urban indigency rate increased 15 percentage points, contrasted with an increase of 4 percentage points for the LAC region. Psacharopoulos et al. (1993) estimated that 1.603 million urban Guatemalans lived in poverty in 1989 compared with 0.805 in 1980, and 0.819 million lived in indigency in 1989, compared with 0.293 million in 1980. Using a different definition of the poverty line (see footnote to Table 2.1), the World Bank finds 1.1 million urban Guatemalans (27.1 percent of the urban population) were poor in 2002.

Urban Poverty and Women's Livelihoods and Employment

The growing rate of urbanization in Guatemala was accompanied by an increase in the number and slight increase in the percentage of households headed by single women (from 22 percent in 1995 to 24 percent in 1998) and percentage of children living without their fathers, which increased from 17 to 20 percent during this period (INE 1997, 1999). Estimates of poverty among urban female-headed households differ. According to one source (ECLAC 1997), half

of urban female-headed households in Guatemala were poor, and one quarter were indigent, making this group one of the most vulnerable in Latin America. According to the World Bank (2003), 26.5 percent of urban female-headed households were poor in 2000, and 2.9 percent were below the extreme poverty line. The poverty incidence among male-headed households was 27.3 percent, indicating that poverty does not differ significantly according to the gender of the household head: both male- and female-headed households are equally likely to be poor. However, the share of female-headed households who are poor in urban areas (26.5 percent) is greater than their share of the urban population (19 percent in 2000), whereas the percentage of male-headed households who are poor is much smaller than their share of the urban population (81 percent). Thus, it is not surprising that urban female-headed households are perceived to be a vulnerable group, for a number of reasons. First is the low number of potential labor market participants in households headed by women, which has been associated with poverty (Sedlacek, Gutierrez, and Mohindra 1993). Second is a low level of female education and literacy. According to ECLAC (1995) urban Guatemalan women had an average of 5.9 years of education, and only 73 percent were literate. Female heads of household had 1.5 fewer years of education than male household heads, and illiteracy rates among urban women in Guatemala were the highest in the region, at 27 percent. Among working household heads, the gender education gap was estimated to translate into earnings that were 15 to 20 percent lower for women with otherwise similar characteristics to males (Arends 1992; Funkhouser 1996). A third factor was the lower level of economic activity observed among urban female heads relative to male heads, which may also be due in part to gender education gaps reducing female job opportunities. Finally, sectoral and occupational segregation were important factors leading to low income among women. Many women worked in the informal sector,[5] in occupations such as petty trading and domestic services or tortilla shops. The informal sector accounted for approximately 63 percent of urban female employment in the mid-1990s; women working in this sector were estimated to have one third the earnings of those in formal sector employment (Funkhouser 1996). Female opportunities in the formal sector included working in textile and small consumer goods industries (*maquilas*). Within sectors women continued to be employed in occupations identified as typically female, and men accounted for a high percentage of managers and employers. Women were frequently discriminated against in terms of wages, participation, and promotion, which helped perpetuate the cycle of poverty among urban women, especially those who were single mothers.

Urban Programs and Poor Working Women

As urban Guatemalan women engage in the labor force, their households may be differentially affected by the scarcity of social services in urban poor neighborhoods, which results from the effects of structural adjustment policies of the 1980s, the civil war, and the chronic public underinvestment in social sectors (World Bank 1998).

Targeted urban programs may also fail to reach working women, who typically spend 12–15 hours away from home, between the long hours spent at work and commuting to and from their place of work. Women heads of household, especially those who lack support from extended family networks, are often left out of community development,

[5]Funkhouser (1996) defines the informal sector as all self-employed workers and workers in firms of four or fewer employees who are not professional, technical, or administrative.

health services, and other targeted programs because of their physical absence from the communities where they live and their inability to comply with program participation requirements (Ruel 2003). This implies that effective programs must be designed specifically to relieve the constraints poor urban women face, especially their need to earn a living and ensure their household's food security while fulfilling their domestic and childcare responsibilities. Reducing the magnitude of these constraints through the provision of reliable and affordable childcare could significantly improve the lives of poor urban women and those of their families.

The *Hogares Comunitarios* Program (HCP) in Guatemala was designed specifically for this purpose. Its key objective was to reduce poverty in urban areas by relieving the main constraint faced by working parents, especially single mothers—their need for alternative childcare.

CHAPTER 3

Objectives, Design, and Cost of the *Hogares Comunitarios* Program

Objectives

The *Hogares Comunitarios* Program (HCP) was initially conceived as a strategy to ensure the care of children of working parents in poor communities lacking access to other childcare options. Its specific objectives are to:

- Facilitate the integrated development of children age 0–7 years of working mothers;
- Provide and promote community participation in the overall development of children, to improve living conditions, and to enrich the quality of social relations.

Design

The concept of the program is that a group of parents selects a woman from the locality and designates her as the "caretaker."[6,7] This woman then becomes responsible for receiving in her home and caring for up to 10 children younger than 7 years of age,[8] Monday to Friday, from 6 a.m. to 6 p.m. During their stay, children receive care and affection, security and hygiene, and food (breakfast, lunch, and two snacks). In addition, the caretakers organize psychopedagogical activities to stimulate the children's development and encourage the formation of moral values and personal hygiene habits.

The program provides three types of inputs when a new *hogar* opens: (1) basic equipment (furniture, kitchen equipment, utensils, educational material, toys, and supplies for 10 children); (2) initial training for caretakers (according to the norms described in the training manual for caretakers); and (3) menus to guide the preparation of meals and snacks for the children. Although no specific norms or regulations exist regarding parents' contributions to a new *hogar,* they are expected to provide time and support, and if necessary, to renovate or repair the future *hogar.*

On a monthly basis, the program offers the following additional set of inputs to the caretakers: (1) money to purchase food for the children (the equivalent of US$0.55 per day per child)[9] and to purchase gas and educational supplies (US$0.03 per day per child for each

[6]In practice, other modalities are often used (see Chapter 5 for further discussion).

[7]The term "caretaker" is used in this report to refer to the woman who takes care of a group of children from the community in her own home. In Spanish, this woman is referred to as the *madre cuidadora.* The term "*hogar"* (home) is used to refer to the community daycare center established in the caretaker's home.

[8]For safety reasons, the program limits the number of children younger than 1 year of age to one per home.

[9]These amounts correspond to those provided in 1998 (average exchange rate: 6 quetzales = US$1).

Table 3.1 Cost structure of the *Hogares Comunitarios* Program, 1998

Item	Cost/child/day (US$)	Percentage of total cost
Program costs		
Direct transfers		
Food	0.55	40
Educational supplies	0.03	2.25
Fuel	0.03	2.25
Administration	0.22	16
Caretaker incentive	0.17	12
Food donations	0.09	6.5
Total program	**1.09**	**79**
Parent costs		
Caretaker incentive	0.29	21
Total	**1.38**	**100**

item); (2) food donations from the World Food Programme[10] to be used in meals prepared for the children; and (3) an "incentive" of US$3.33 per child per month for the caretaker. Parents are expected to complement this amount with a contribution of US$5 per child per month and to provide monthly supplies of basic items such as sugar, *incaparina* (a fortified cereal blend), toothpaste, toilet paper, and hand soap.

According to the program's documents, the services to be provided by the program (from 6 a.m. to 6 p.m., Monday through Friday) are the following:

1. Children's nutrition: breakfast, lunch, and two snacks a day, with an overall goal of providing 80 percent of the children's daily nutrient requirements.
2. Psycho-pedagogical activities, early child stimulation, supervised play, and socialization.
3. General care and hygiene.

At the time of the evaluation, the program comprised 1,200 *hogares comunitarios* (community daycare centers) that cared for approximately 10,000 children aged newborn to 7 years of age, in both urban and rural areas of all 22 departments of the country.

Cost Structure

The cost structure of the HCP is presented in Table 3.1. Overall, the cost of the program was estimated at US$1.38 per child per day in 1998. This ranks the Guatemala HCP in the middle of the range compared to five similar programs in Latin America that range from US$0.58 (Colombia's *Hogares Comunitarios de Bienestar*) to US$2.15 (Bolivia's *Proyecto Integral de Desarrollo Infantil*) (B. de la Brière, personal communication).

Table 3.1 shows that only one fifth of the cost is incurred by parents, while the remainder is borne by the government. Food donations from the World Food Programme represent only 6.5 percent of the total cost. By far the most expensive component of the program is the cash transfer for food, which represents 40 percent of the total cost.

[10]The monthly food donations usually consist of 44 pounds of maize, 1 gallon of cooking oil, and 13 pounds of black beans or 6 cans of fish.

CHAPTER 4

Overview of Study Objectives, Design, Methods, and Samples

As noted earlier, the research included both an operational and an impact evaluation. These two main study components used different designs, samples, and methodological approaches, which are briefly summarized in this chapter to provide a general overview of the study. More complete information on these aspects is provided in Chapter 5 for the operational evaluation and in Chapter 7 for the impact evaluation.

Operational Evaluation

The objectives of the operational evaluation were to (1) assess the quality of implementation of the program, (2) evaluate the quality of delivery of the interventions, and (3) assess the general perceptions and appreciation of the program from the point of view of program implementers and beneficiaries. The unit of observation and analysis for this component of the study was the *hogar.* All *hogares* operating in the three zones of Guatemala City where the program was functioning at the time were included. Interviews with program caretakers and 8-hour observations in the *hogares* were conducted to address the first two objectives, and a series of focus group discussions were held to address the third objective. Table 4.1 summarizes the three main objectives of the operational evaluation, and the methodological approaches, samples, and sampling strategies used.

Impact Evaluation

The main objective of the impact evaluation was to assess the impact of the program on children's diets and nutrient intakes. The unit of observation and analysis for this component of the evaluation was the child and his or her family. The design used for the impact evaluation was a cross-sectional beneficiary/matched control survey. Beneficiary children 2–5 years of age were randomly selected from all *hogares* operating in one zone of Guatemala City (Mixco). The control group, which consisted of nonparticipating children and their families, was selected by individually matching neighborhood children with beneficiary children based on their age (± 3 months) and maternal employment (all mothers from both groups had to be working outside the home, a key eligibility criterion for participating in the HCP). Household survey methodologies, dietary assessment methods, and standard measurement of maternal and child anthropometry were used for the impact evaluation.

The study had two additional objectives: (1) to compare the employment characteristics, income, and other socioeconomic characteristics of beneficiary mothers with those of other

Table 4.1 Summary of operations research objectives, methods, and sample

Objectives	Data collection methods	Sample	Sampling strategy
1. Evaluate quality of implementation of the program.	Semistructured interviews with program caretakers Semistructured 8-hour observations in *hogares*	All *hogares* operating in three zones of Guatemala City	All *hogares* operating at the time (n = 206) All *hogares*[a] (n = 191)
2. Evaluate quality of delivery of interventions.	Semistructured 8-hour observations in *hogares*	As above	As above (n = 191)
3. Assess perceptions, attitudes, satisfaction of users and implementers.	Focus group discussions with: Program caretakers Their supervisors Beneficiary parents	 Two focus groups/zone (n = 6) One focus group with supervisors Two focus groups/zone (n = 6)	Purposive sampling: supervisors helped gather program caretakers and beneficiaries in their respective zones. All supervisors from three zones were included in the "supervisor" focus group.

[a]A smaller number of *hogares* were included in the observations because (1) some *hogares* had been closed by the time the observations were carried out; (2) only single *hogares* (with one caretaker and maximum of 10 children), as opposed to multiple *hogares* (with 20–30 children and more than one caretaker) were observed; and (3) *hogares* that received additional resources from nongovernmental organizations were excluded.

working women from the area who used different types of childcare. The intention was (1) to indirectly assess the effectiveness of the program targeting[11]; and (2) to characterize the types and cost of childcare alternatives used by poor urban mothers and compare them with the cost of the HCP. To achieve these objectives, a simple random survey of households with children newborn to 7 years of age was conducted in the same zone of Guatemala City (Mixco). For this sample, an abbreviated household survey was used, and maternal and child anthropometric measurements were taken. The children's dietary intake was not assessed.

Table 4.2 summarizes the objectives, methods, sample, and sampling strategy for the impact evaluation component.

[11]Although it may have been more logical to discuss the assessment of targeting in the operational evaluation section, we chose to include it in the impact evaluation section because the data used to assess targeting were the same as those used for the impact evaluation (that is, the household survey data). For simplicity, all analyses based the household survey data are presented in the impact evaluation chapter, whereas all analyses based on the data collected at the *hogar* level are in the operational evaluation chapter.

Table 4.2 Summary of impact evaluation objectives, design, sample, sampling strategy, and data collection methods

Objectives	Design	Sample	Sampling strategy	Data collection methods
Main objective of impact evaluation				
1. Assess impact of program on beneficiary children's diets.	Cross-sectional beneficiary/matched control design	Beneficiaries and individually matched control children. Matching criteria: Same age ± 3 months Living in same neighborhood Mother working outside the home	Beneficiaries: five randomly selected children 2–5 years of age from all 60 *hogares* in area (target sample = 300)[a] Control: individually matched children selected using maps and census data updated by project staff (target sample = 300)[a]	Detailed household survey[b] Dietary intake assessment Maternal and child anthropometric measurements
	Propensity score matching	Beneficiary children matched with statistical comparison group using propensity score matching techniques; propensity score computed based on child age, sex, maternal characteristics (including type of work), household characteristics, and community dummies	Beneficiaries (treated): randomly selected children 2–5 years of age from all 60 *hogares* in area (sample used in calculations = 250) Control: statistical comparison group created by propensity score matching; comparison group = 123 using nearest neighbor matching and 255 using kernel matching	Same data as above
Additional objectives				
2. Compare beneficiaries with population of working women from same area (to indirectly assess effectiveness of targeting).	Cross-sectional random survey	Target sample: 1,266 households; actual sample: 1,363	Simple random sample of households with newborn to 7-year-old children living in Mixco (based on maps and census data updated by project staff)	Abbreviated household survey[b] Maternal and child anthropometric measurements
3. Characterize type and cost of childcare alternatives used, and compare to HCP.	Same as objective 2	Same as objective 2	Same as objective 2	Same as objective 2

[a]For information about sample size calculations, see Chapter 7.

[b]For information about modules used in detailed and abbreviated household surveys, see Chapter 7.

CHAPTER 5

Operational Evaluation of the *Hogares Comunitarios* Program: Conceptual Framework, Objectives, and Methodology

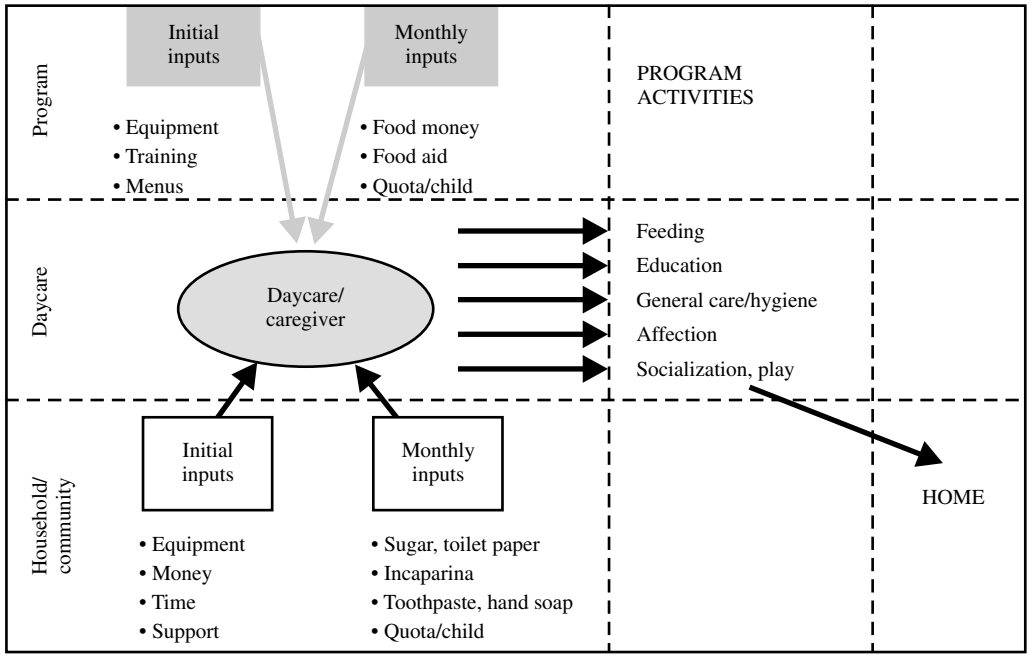
This chapter describes the process undertaken to evaluate the quality of implementation of the HCP in three zones of Guatemala City. The conceptual framework used to design the operational research, the objectives of the evaluation, and the methodology used are described. Key findings are presented in Chapter 6, along with the recommendations made to the program and a summary of the measures adopted by the new administration to strengthen the program in 2000.

Conceptual Aspects of Operations Research

Operations research (also sometimes referred to as "Process Evaluation" or "Performance Evaluation") is concerned with studying the processes by which programs are implemented and interventions are delivered to intended beneficiaries. The main purpose of such an evaluation is to identify, as early as possible in the life of a program, any shortcomings in the process that may affect the effective delivery of the intervention, and as a result, its potential impact on the expected outcomes. The main goal is to generate the necessary information to program planners and implementers that will allow them to design and test potential solutions to improve program delivery and will lead to the timely implementation of corrective actions. Another important aspect of operations research is to identify the various program actors and stakeholders involved and the ways in which these individuals and groups can influence program operations and impact. Thus, to carry out an operations research, one needs to use a broad "systems approach" by which the system to be analyzed and its main components are identified, as well as the main actors and stakeholders involved. These may include program implementers at various levels of implementation (national, state, local), as well as beneficiaries (communities, households, individuals) and nonbeneficiaries.

Operational research methods have been used to evaluate the quality of implementation of a number of social programs (such as the PROGRESA program in Mexico) (Adato, Coady, and Ruel 2000) as well as various nutrition and healthcare programs. Some examples of the use of operations research in primary healthcare programs include the assessment of health services' organization at the community level; the determination of optimal forms of application of existing simple and low-cost technologies; the planning and training of health promoters; and the evaluation of supplementary feeding programs (Blumenfeld 1985; Hermida and Robles 1992; Robles et al. 1995; Ruel, Arévalo, and Martorell 1996).

Figure 5.1 Inputs and activities of the *Hogares Comunitarios* Program



The main focus of the present evaluation was to study the operational aspects of the *Hogares Comunitarios* Program (HCP), with the goal of identifying areas that could use improvement, and to propose solutions for strengthening the program and maximizing its effectiveness.

Identification of the System to Be Analyzed

To study the operational aspects of the program and the constraints to implementation, the first steps are to identify the system to be studied and to determine its boundaries. The evaluation may select a specific portion of a wider system, but it is important to determine at the onset what the limits of the system of interest are. In the case of the evaluation of the HCP, it was determined that the system under study would begin with the *hogar* (from the moment of its inclusion in the program), and would end with the beneficiary children leaving the *hogar* at the end of the day to return to their homes. The unit of analysis in the present evaluation is the *hogar* itself.

Figure 5.1 illustrates the different components of the system to be studied (within its limits), and includes the various expected inputs from the program and from the parents. Also identified in the figure are the different activities that are to be carried out during the children's stay in the *hogar* (for example, the activities established by the program). In Figure 5.1, we separate the inputs coming from the program from those expected to come from the parents (and the community); we also separate the initial inputs (to be received before the *hogar* is opened) from the monthly inputs (see description of program inputs and activities in Chapter 3).

Objectives of the Operational Evaluation of the HCP

The specific objectives of the operational evaluation of the program were the following:

1. To review and evaluate the operational aspects (implementation) of the program, using operations research methodologies to identify constraints to implementation and to provide recommendations to improve program operations.
2. To evaluate some aspects of the quality of delivery of the interventions (for example, the quality of attention provided by the program caretakers and their skills in performing the activities recommended by the program such as caring for children, undertaking psychopedagogical activities, maintaining good hygiene of the children and the *hogar,* and using the menus).
3. To evaluate the level of satisfaction and the attitudes of the program caretakers, the parents of beneficiary children, and the social workers (*orientadoras*)[12] in relation to the program. An additional objective was to assess the level of participation of the parents and their contribution in time and resources to the program.

Methodology

Operations research methodologies, including both qualitative and quantitative approaches, were used to evaluate the different aspects of the program's functioning. Each of the components identified in Figure 5.1 as "inputs" was evaluated individually and in conjunction with other components of the general system to evaluate whether bottlenecks existed in the implementation of the different components of the program. Likewise, we evaluated whether the different activities suggested by the program were actually taking place as planned. These aspects were evaluated through semistructured interviews with the caretakers and semistructured observations in the *hogares.*

To evaluate the quality of care provided in the *hogar* (second objective of the evaluation), semistructured observation techniques were used.

Finally, qualitative methods, such as focus groups and semistructured interviews, were used to address the third objective, that is, to study the attitudes, opinions, and the level of satisfaction of the parents of beneficiary children, the caretakers, and their supervisors (social workers).

Semistructured Interviews with the Program Caretaker

A questionnaire was designed to interview the program caretakers about their experience with the operational aspects of the program. Questions about the following themes were included:

1. *Inputs at the start of the program.* The caretakers were asked if the program had delivered the material and supplies, if the material had been delivered on time, and whether it was in good condition. They were also asked whether the parents of beneficiary children provided any inputs at the time a new *hogar* was opened, whether they had received appropriate training from the program at the time, and which of the education topics they could remember.
2. *Monthly inputs.* The program caretakers were asked the same types of questions about the receipt of monthly inputs, both from the program (funding for food, fees for each child in attendance, donated food) and from the families of the beneficiary children (monthly fees and supplies). For each type of input, they were asked what types of problems they had encountered, such as delays or problems with the quality of donated food, the noncompliance of the parents with their

[12] Social workers, called *orientadoras* in the HCP, are program staff directly in charge of the field supervision of the *hogares* and the caretakers. They are assigned a given number of *hogares* that they are expected to visit weekly for supervisory activities.

payment responsibilities, or problems with the program's schedule.

3. *Activities and services.* Program caretakers were asked a number of questions about the activities they undertook in their *hogar.* They were also asked to share their impressions about the program's proposed schedule[13] of activities and whether it was useful for organizing their own daily activities. They were asked about the use of the menus they had received from the program, about substitution of food to adjust for availability and price, about educational activities and the time required to perform them, and whether they usually received support from their families in attending children, maintaining hygiene in the *hogar,* and/or helping with food purchasing and preparation.

Semistructured Observations in the Hogares

Eight-hour observations were done in each *hogar* of the sample. The objective of the observations was to complement the information obtained through interviews with caretakers with some additional "real-life" information on operations. The main focus was to observe the implementation, duration, and sequence of the different activities that took place in the *hogar* and to study how the program caretakers organized their time during the day. We were also interested in observing the contribution of other members of the family in the upkeep of the *hogar,* in childcare, and in helping organize activities. To accomplish this, the observation guide was designed in such a way that the activities (up to three) that the caretakers were performing were recorded every 15 minutes. This was done as a type of instantaneous observation or "spot check" and only activities taking place at that particular time were recorded. If the caretaker was receiving help, this was also noted in a separate form reporting on the activities of the helpers (activities of up to a maximum of two helpers were recorded using the same approach).

The observation was also used to evaluate various aspects of the quality of attention given to children in the *hogar.* An instrument was designed to capture aspects such as the general attitude of the program caretaker toward the children (whether she was affectionate, attentive, patient, how she solved problems, and whether she neglected the children); her level of involvement in educational activities (for example, whether she organized and managed these activities or if the children were merely given toys or materials to paint or play on their own); the general hygiene of the *hogar* and of its members, the cleanliness of children and whether caretaker mothers taught them basic principles of hygiene; and the security of the *hogar* (whether there were dangerous objects or animals in the area where the children played or in other places easily accessible to children).

Focus Groups

Focus group discussions were organized separately with three different groups: program caretakers, their direct supervisors (social workers), and parents of the beneficiary children. The objectives of the focus groups with program caretakers were to enrich the data gathered in the interviews and observations with additional information about their perceptions about the program and their role within the program. Information was also collected about the caretakers' perceptions regarding the training they had received from the program prior to opening

[13] The program has an established schedule for daily activities in the *hogares.* The schedule proposes times and durations for specific activities, including 2.5 hours for psycho-pedagogical activities, 3 hours for food preparation (two meals and two snacks), 2.5 hours serving food and helping children to eat, and some time for washing dishes and attending parents when they drop off or pick up their children.

their *hogar* and about other operational aspects of the program, such as the demand for the program, the turnover of children, and the participation of the parents of beneficiary children.

The focus groups were the only methodology used to interview the social workers. The objective was to obtain a minimum amount of information about their perception of the program; their role, responsibilities, and activities as supervisors; and the quality of their relations with the caretakers, other program staff, and the beneficiary parents.

Finally, focus groups were organized with the parents to evaluate their level of satisfaction with the program, to discuss their perception of the quality of services offered, and to hear their opinion about the usefulness and the cost of the program, and whether they had any suggestions on how the program could be improved to better fit their needs.

Geographic Area and Sample

The study took place in the urban slums of Guatemala City, where 246 *hogares* were listed at the start of the project. The main reason for limiting the project to urban areas was because this project was one of a series of country case studies whose objective was to understand the process of urbanization and its consequences on the food security of the population living in marginalized urban areas. Funding restrictions did not allow extending the sample to rural areas, but the methodologies developed during this project are flexible enough to be easily adapted to rural areas, should additional funding be obtained to conduct a follow-up study.

It was decided to include all the *hogares* located in three zones (*municipios*) of the capital city: Zone 18, Villa Nueva, and Mixco. The total number of *hogares* included in the semistructured interviews was 206 (70 *hogares* in Zone 18, 69 *hogares* in Villa Nueva, and 67 *hogares* in Mixco). Of these 206 *hogares,* 191 were simple (with one program caretaker and a maximum of 10 children), and 15 were multiple (had up to 20 children and 2 program caretakers). For the semistructured observations, only the simple *hogares* were included, because the observation guides were not designed to observe more than one program caretaker at once. Thus, the total number of *hogares* included in the observations was 183 (58 in Zone 18, 66 in Villa Nueva, and 59 in Mixco). The *hogares* that received support from a nongovernmental organization (NGO), in addition to the support received from the government, were excluded from the sample because the conditions in these *hogares* were different, especially relative to their level of human and financial resources. In addition, some of the *hogares* included in the semistructured interviews had been closed before we carried out the observations, which also reduced the sample size for the *hogares* included in the 8-hour observations.

The focus groups were planned in conjunction with the program personnel. The social workers of the three zones included in the study assisted us in gathering groups of parents of beneficiary children and program caretakers. Two focus group sessions were organized by zone, for each group of participants (parents of beneficiary children, program caretakers who had been in the program for several years, and other caretakers who had less than 2 years in the program), for a total of 6 focus groups per zone, making a total of 18 focus groups. Only one focus group was conducted with all social workers from the three zones.

The findings of the operational research and how the information was used to strengthen the program are described in the next section.

CHAPTER 6

How Well Does the *Hogares Comunitarios* Program Work? Key Findings of the Operational Evaluation and Follow-Up Actions

This chapter summarizes the key findings of the operational evaluation and our recommendations to strengthen the program. Findings regarding the quality of *implementation* of the program are presented first, followed by the findings related to the quality of the *services* offered by the program. Results concerning the *perceptions and views* of program implementers and beneficiary parents about the program, and their suggestions on how to strengthen the program are presented in the next chapter. The final chapter provides a brief summary of the main actions that were implemented by the new program administration in 2000 in response to these recommendations.

Operational Aspects of the Program

The operational evaluation assessed whether inputs from the program and from parents were received in a timely fashion and whether all the elements of the intervention package were delivered as planned.

Program Inputs

In general, the initial inputs from the program—material, furniture, and equipment—were received in a timely fashion and in good condition (Table 6.1). The material, however, tended to break or deteriorate over time and was not replaced by the program. For *hogares* that had been in the program for many years, it often implied that they had hardly any material left from the program. This was particularly true for the gas stoves, the small mattresses, and the toys, which were reported broken in close to 90 percent of the *hogares* (Table 6.1). When asked what measures were taken when the equipment failed, the caretakers reported that either they took care of it, or that parents of beneficiary children helped to fix the equipment. With the exception of the education material, the program did not usually replace any broken equipment. Because the equipment and supplies are necessary for the good functioning of the *hogares,* a recommendation was made that in the future the program help repair or replace broken material so as to ensure a constant quality of services.

Caretakers also reported having been trained as planned before opening their *hogar.* Most of them, however, expressed a need for additional training. They expressed a particular interest in receiving training on using menus and on substituting foods of similar nutritional value

Table 6.1 Conditions of material provided by program at the time of opening the *hogar* and at the time of interviews

Type of material	Percentage of caretakers who received new material when they opened their *hogar* (n = 206)	Percentage of caregivers whose material broke since they received it from program (n = 206)
Furniture	85.4	52.4
Gas stove	93.2	85.9
Small mattresses	93.7	90.7
Kitchen utensils	91.7	69.8
Educational material	95.9	55.3
Toys	96.0	89.6

to adjust for changes in prices and seasonal availability. Although training in this area is supposed to be carried out by the social workers during their home visits, the caretakers reported not having received this training. The program should include at least some training on the use of the menus and food substitutions during the initial training so that caretakers can be better equipped to provide children with nutritious yet affordable meals.

Some delays were reported in receiving the monthly cash transfers to purchase food and material for children. Delays were felt strongly by the caretakers and affected their motivation and morale. The program should therefore make special efforts to avoid payment delays in the future.

Caretakers consistently expressed concern about the inadequacy of the amount earmarked for food purchases—92 percent indicated that the amount of money was insufficient to follow the menus recommended by the program and to ensure an adequate diet for the children. It is likely that the problem was due to a combination of factors, including real increases in food prices and the fact that the caretakers tended to use the transfers to feed their whole family in addition to the 10 (and sometimes more) beneficiary children. The caretakers reported using various approaches to the problem of lack of money, namely using their own money (83 percent of those who felt that the amount of transfer was insufficient), borrowing from their husband (1 percent), buying cheaper food (5 percent), buying where prices are lower (5 percent), and reducing the amount of food given to the children (4 percent). This latter approach could have negative effects on children's diets and could significantly reduce the program's nutritional impact. Thus, it should be strongly discouraged. The program should plan to reassess the cost of the menus on a regular basis and adjust the amount of the monthly cash transfers based on changes in food prices.

Another aspect that should be considered by the program is the time required for caretakers to collect their cash transfer every month. Caretakers reported spending, on average, 3 hours in travel and waiting time to receive their monthly checks, whereas one third of them actually spent more than 3 hours in this activity. It may be necessary for the program to consider a more efficient payment system to minimize caretakers' travel time.

Some delays were also reported in receipt of food donations at the time of the evaluation. Caretakers were not overly worried about this problem, but a more serious concern was the time and transport costs required to acquire the products. Although 13 percent of the caretakers received the food at the *hogar* itself, the remaining caretakers had to go either to the house of a community

promoter (13 percent) or in some other location far away from the *hogar* (57 percent). On average, caretakers spent 1 hour to collect the donated foods, and almost 25 percent of them paid for transport (the cost ranged from US$0.25 to US$6.66). It may be worth revisiting the distribution of donated foods and to assess whether more convenient delivery points could be identified to minimize the time required for pickup.

Parents' Inputs

Both the interviews with caretakers and the focus groups (with caretakers and beneficiary parents, respectively) revealed a very minimal level of participation of beneficiary parents in all activities related to the *hogares.* Although it is not an explicit requirement of the program, beneficiary parents are expected to provide inputs at the time a new *hogar* is opened and to be available to assist caretakers on specific occasions or when material breaks and needs repair. Caretakers reported very little participation from beneficiary parents; indeed, few reported having ever received any type of help from parents.

Parents also had difficulties fulfilling the two requirements of the program—that is, to pay their monthly fees on time and to bring the required supplies every month. Delays in monthly payments were extremely common: 65 percent of the caretakers reported that parents were late every month and some reported delays of up to 45 days (Table 6.2). There were also extreme cases where parents never paid and had to remove their child from the program. Caretakers showed an honorable level of tolerance and flexibility in this regard. The program should consider a mechanism to increase parents' sense of responsibility and respect toward caretakers, who should not be victimized because they are serving a resource-constrained population.

Conclusions on Program's Operations

Overall, the evaluation indicated that the program is operating quite efficiently, and without any significant bottlenecks. A number of aspects that could affect the morale and incentive of program implements (especially the program caretakers), however, are worth noting. For instance, the low level of parental participation is a main operational constraint, and the program should design and implement concrete activities to improve the parents' interest and participation. Delays in payments should be avoided because they may affect the quality of attention provided to children. The amount of the transfer should also be reexamined periodically and adjusted to compensate for food price increases, so as to ensure that the quality of the diet of beneficiary children is maintained. An effort should also be made to find ways to reduce the time and distance that program caretakers have to travel to receive their monthly payments and food rations.

Table 6.2 How frequently parents are late in paying their monthly fees (based on the caretakers' recall)

Timing of payment	Number of *hogares*	Percentage of *hogares*	Cumulative percentage
They are late each month.	105	64.8	64.8
Some are late each month.	39	24.1	88.9
Once in a while, a few are late.	13	8.0	96.9
They are almost never late.	5	3.1	100.0
Missing	44	21.4	
Total	206	100.0	

Quality of Services

The 8-hour semistructured observations were used to assess whether the daily activities were taking place as planned and whether the quality of attention was adequate.

Hygiene and Safety of the *Hogares*

The general conditions of the houses where the *hogares* were located were better than the average for the areas where the study took place (Table 6.3). For example, according to the Demographic and Health Survey (INE 1999), only 43 percent of households in the metropolitan area had a refrigerator, compared to 77 percent in our sample. Similarly, flush toilets and tap water were almost twice as common in our sample than among the DHS sample. Clearly, the caretakers tended to have more formal and better-equipped houses, greater availability of services, and a larger number of assets than the general population living in marginalized urban areas of Guatemala City. This largely reflects the specific criteria established by the program that houses hosting a *hogar* must meet certain standards in terms of space, availability of services, and safety. Not all houses met all criteria, however, and the program staff indicated that some level of flexibility was required when working in poor areas.

Hygiene was generally good, but various problems were encountered, such as garbage on the floor, dirty dishes, loose animals, uncovered drinking water, and caretakers who did not appear to be clean (Table 6.4). Safety was also a concern, with almost 40 percent of the *hogares* having some potentially harmful objects within children's reach, such as sharp, jagged objects, dangerous staircases, and construction material, to name a few.

It is recommended that social workers pay more attention during their weekly visits to identify hygiene and safety problems and to help caretakers find ways to reduce risks for children.

Table 6.3 Physical characteristics and availability of services in the *Hogares Comunitarios* Program (*n* = 206)

Characteristics	Percentage of *hogares*
Ownership of house	
Owned	80.6
Rented	7.8
Owned with mortgage	10.7
Other (lent, family inheritance, and so forth)	1.0
Type of residence	
House	94.2
Apartment	1.5
Informal house	3.9
Other	0.5
Floor	
Mosaic	30.6
Cement	67.5
Earth	1.9
Sanitary facilities	
Flush toilet	88.2
Latrine	11.8
Assets ownership	
Radio, tape deck	87.9
Television	96.1
Video (VCR)	22.3
Refrigerator	76.7
Bicycle(s)	41.7
Motorcycle	10.7
Car	15.5
Electric stove	3.9
Blender	35.5
Toaster	4.1
Storage of drinking water	
Plastic or ceramic tank	10.0
Bucket	74.5
Pan	1.0
Bottled water	14.0
Other	0.5
Missing	2.9

Daily Activities and Caretakers' Time Allocation

The program's proposed schedule of activities is illustrated in Figure 6.1A. According to this schedule, the caretakers' time allocation should be approximately as follows: 25 percent cooking and preparing food, 20 percent serving and feeding children, 14

Table 6.4 Frequency of observation of nonoptimal hygiene practices (*n* = 206)

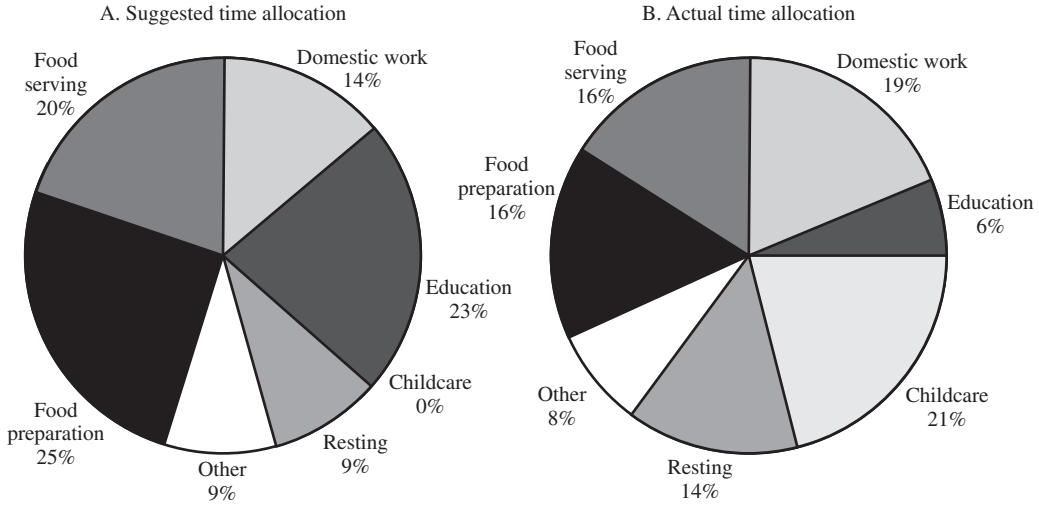
Practices	Percentage of *hogares*
Drinking water containers are uncovered.	13.0
There is garbage on the floor.	25.2
There is uncovered food.	7.8
Chickens or other animals are loose in the house.	33.7
There are dirty dishes in the sink.	22.8
There are dirty clothes in the open.	16.1
There are lots of flies.	12.1
There is garbage in the room where children play.	24.8
Children are playing with water.	8.7
The caretaker is dirty.	9.2

percent cleaning and maintaining the *hogar,* 23 percent conducting psycho-pedagogical activities, 9 percent resting and personal care, and 9 percent performing "other" activities. Figure 6.1B shows the results of our observations of the caretakers' time allocation.

The time spent by caretakers on food-related activities, in the general maintenance of the *hogar,* and in resting and self-care was, on average, comparable to that suggested by the program. However, caretakers spent markedly less time in psycho-pedagogical activities than scheduled by the program (only 6 percent); in fact, 40 percent were not observed carrying out any educational activities at all during the observation period. Caretakers, on the other hand, dedicated up to 21 percent of their time in taking care of children and in attending to their hygiene and general care needs. The time allocated to these types of activities was grossly underestimated by the program's proposed schedule, which assumed that these activities could simply be combined with all others.

Caretakers also spent time purchasing food for the children, and they usually did so during the opening hours of the *hogar.* It is customary among lower socioeconomic

Figure 6.1 Time allocation of program caretakers



groups in urban areas to purchase food on a daily basis, and the program caretakers were no exception. This meant that they left the children either unattended or with their own children or other family member present at the time. More than half the caretakers left the *hogar* during our observations, for periods varying between 15 minutes and 4 hours (the average was 1 hour). It is unclear whether the caretakers felt more comfortable to leave the *hogar* because our observers were there, or whether those who abstained from leaving did so because our observers were there. Irrespective of the direction of this potential bias, it is disconcerting to see that the practice of leaving the *hogar* is so common and seems to be perfectly natural. The program administration is aware of this issue, but some tolerance is probably necessary to allow caretakers to carry out these activities. However, the program should have a stricter control to ensure that children are not left alone for any length of time, and that if caretakers have to leave, they have a reliable person taking care of the beneficiary children. It is important to be aware, however, that whoever is attending the children when the caretaker mother is not present has not received any training from the program to take on this responsibility. This could cause serious problems to the program and to the caretakers themselves if accidents occurred. Caretakers should be better informed about the potential consequences of leaving children unattended or with a young or inexperienced helper.

Interaction between Caretakers and Beneficiary Children

In general, caretakers tended to be affectionate with the children and responsive to their needs. They were attentive to children when they cried or needed attention, and they tended to settle conflicts peacefully. There were some exceptions, however; approximately one third of the caretakers were observed yelling at children, and 13 percent hit children (Table 6.5). Considering that these unacceptable behaviors were observed in the presence of our fieldworkers, it is possible that they occur even more frequently in the absence of visitors. This is another point that should be specifically addressed in the training, retraining, and supervision of caretakers by the social workers, even though they may be accepted practices in many households from these neighborhoods.

The caretakers also generally did a good job at maintaining children's cleanliness, often without having spare clothes to change children into when "accidents" happened. Teaching of hygiene practices to children was also observed in most of the *hogares,* hand washing before and after meals being almost the norm. Sustained efforts to encourage mothers to help children acquire good hygiene practices are important.

The caretakers were usually heavily involved in feeding children, in helping the little ones to eat, and in encouraging children with poor appetites to finish their meals.

The psycho-pedagogical activities were by far the main weakness found in the evaluation of the quality of services. As indicated previously, caretakers dedicated very little time, if any, to these activities. And when they did, they often only provided material or a few suggestions and let the children play on their own. This problem was widespread, and alternative solutions should be sought. One potential solution would be to hire specially trained educators to take responsibility for the educational activities in a small number of *hogares,* a model similar to that of the social workers.

Attitudes and Perceptions of the Main Implementers and Users toward the Program

The information acquired through focus-group discussions with the various stakeholders depicts a program that is generally appreciated and well perceived by both its users and its implementers. The program was unanimously described as serving the noble purpose of helping families with scarce

Table 6.5 Quality of interaction between caretakers and beneficiary children (n = 183)

Attitude of caretakers	Percentage observed having these interactions	Number of times observed having these interactions (range)	Mean number of times had these interactions (among those who did)
Physical and verbal affection			
Gives verbal affection to children.	86.3	0–15	4.71
Gives physical affection.	74.9	0–15	3.61
Physical and verbal rejection			
Scolds children verbally.	70.5	0–22	5.60
Hits children.	13.1	0–4	1.83
When a child is crying, she:			
Attends child immediately (verbally).	66.7	0–13	2.57
Attends child immediately (physically).	33.9	0–8	1.51
When a child is complaining of pain or other complaint, she:			
Scolds child.	16.0	0–7	0.31
Ignores child.	57.6	0–10	2.46
Attends to the child.	54.3	0–5	1.57
Comforts the child.	17.9	0–4	1.70
Punishes the child.	2.0	0–4	2.33
When children fight, she:			
Yells at them.	24.2	0–8	2.16
Gets mad at them.	33.0	0–10	1.95
Solves problems with calm.	76.4	0–19	3.41
Gives affection to one of them.	29.8	0–9	2.49
Punishes them.	19.8	0–6	1.74
Ignores them.	42.9	0–9	2.64

resources, especially women heads of household and their children.

The main problems identified by each group as needing further attention are summarized in the following sections.

Caretaker Mothers

Caretaker mothers identified concerns in two main areas: (1) the quality of services and (2) the lack of support from parents and from the program staff.

The main quality issue was the absence of health supplies and services or of links with the health system. Caretakers deplored the fact that the program stopped providing basic medicines, vitamins, and deworming drugs for children; they recommended that this service be revived. The issue of the increase in food prices and the related difficulties they had in following the menus was discussed in all focus groups; caretakers felt that this problem constituted a main threat to the quality of the services provided by the program.

Probably the greatest concern reported by the caretakers was the expectation from the program that they act as teachers and educators when they felt they did not have the time, training, or financial incentives to do so. The implications of this concern for the program were discussed earlier. Also reiterated in the focus groups were the problems of lack of support from beneficiary parents.

Overall, caretakers said that they really enjoyed their work and that they perceived a great benefit from the program because it allowed them to work at home while also taking care of their own children (or grandchildren).[14]

[14]The majority of program caretakers had at least one relative (child, grandchild, or other relative) in the program.

Beneficiary Parents

Beneficiary parents were generally happy and positive about the program, extremely appreciative of the excellent work of the caretakers, and grateful to the program for its assistance. They also indicated that the cost of the service was low, compared to other alternatives, but that they would not be able to pay more.

The suggestions they made to improve the program are summarized as follows:

1. *Include Saturday care.* The large majority of beneficiary mothers work on Saturdays, at least until midday or 2 p.m. The types of childcare arrangements beneficiary parents are currently using on weekends and their cost are described in Chapter 8. As discussed later, this is clearly an important issue for the program to consider, because the benefits provided by the program may be significantly reduced if parents have to pay expensive childcare costs on weekends.
2. *Provide health services and assistance when children are sick.* Most parents risk losing their employment if they miss work more than one day per month. Therefore, they have few alternatives when their child is sick and unable to attend the *hogar.* In addition, because of their employment, neither the program caretakers nor the parents themselves are able to take the child to the health center during open hours (daytime).
3. *Include more than one young infant per* hogar. The program currently cannot include more than one young infant per *hogar* because of the high ratio of children to caretaker. The issue, however, is truly a problem that poor families face. It is especially acute for women who are single breadwinners and who do not have maternity leave benefits, which constitutes the overwhelming majority of women in the urban slums of Guatemala City. Even when maternity benefits are provided, they usually cover only the very first few weeks of the child's life. Although the current program does not have the capacity to include more than one young infant, it may be worth considering an additional childcare modality. For example, a similar type of subsidized program adapted to the needs of young infants could be established to specifically target low-income working parents with young infants.

Beneficiary parents also expressed a concern about caretakers who leave children alone with family members younger than 14 years of age. This legitimate concern deserves additional discussion between program staff and caretakers.

Social Workers

The focus group with social workers unveiled a surprisingly high level of dissatisfaction with the program, which the management should review carefully. Because the social workers play such an important role at the local level with caretakers, beneficiaries, and communities, the program cannot afford to ignore their concerns. Many of the issues raised in the focus group were related to problems with their direct supervisors, and with the lack of support they felt they were receiving from them.

The social workers' relationships with caretakers, on the other hand, appeared to be generally satisfactory, and they felt appreciated by them. In their role as supervisors, they experienced difficulties at times, for example, when caretakers did not accept suggestions or failed to comply with program norms. Overall, however, they characterized their relationship with the caretakers as generally good and rewarding.

The social workers reported having little contact with beneficiary parents. This is not surprising, as parents are notoriously absent from the community during work hours. It is not clear whether social workers are expected to meet with parents outside of normal work hours or on weekends, but the

absence of parents from their community greatly limits communication between the program and beneficiary parents.

Summary of Recommendations Made and Response of the New Program Administration

Our operational evaluation suggested that the HCP is a carefully designed and well-implemented program that is much appreciated by its users and implementers. The evaluation, however, highlighted certain areas that could be strengthened to improve the program's efficiency and effectiveness. Based on our evaluation results, specific recommendations were made to the program to focus on the following aspects: (1) the inclusion of a health component in the package of interventions to ensure that all aspects of children's nutrition, health, and development are covered; (2) the development of a mechanism to promote greater parental and community participation, especially since community development is one of the stated objectives of the program; (3) the continued strengthening of the psycho-pedagogical activities, but without overburdening the program caretakers with responsibilities that they are poorly prepared and trained to undertake; and (4) the strengthening of the incentive, training, and monitoring structure for field staff, especially caretakers and their supervisors. In addition, our research team recommended that the program gave serious consideration to readjusting the amount of the cash transfers for food, based on changing food prices. Finally, we suggested that the program should consider developing a new model to care for children younger than 1 year of age (which would require a greater caretaker/child ratio) to facilitate the early reincorporation of mothers into the labor force if they need to for financial reasons or to maintain their employment.

Findings of our evaluation became available at the time that the new administration took over the program in early 2000. Presentation of the findings was made to the new program administration in Guatemala just as the program's work plan for the next 4 years was being developed. Thus, the timing of the operational evaluation could not have been better, and the findings were discussed with a new administration eager to strengthen the program. Their strengthening plan included the following improvements:

- Operations
  - A 22 percent increase in the amount of cash transfer to caretakers for food purchases
  - A 38 percent increase in the incentive provided to caretaker mothers
- Education
  - Hiring of 110 educators to carry out the psycho-pedagogical activities and relieve caretakers from this responsibility
  - Provision of books and educational material
- Health
  - Immunization campaigns, deworming activities
  - Distribution of donated medicines
  - Links with the healthcare system to ensure follow-up of sick beneficiary children
- Food and nutrition
  - Increase in the variety of food products received from the World Food Programme
  - Review of the menus to adapt them to local dietary patterns and food preferences (by department)
  - Improvements in growth monitoring activities: training of personnel to improve anthropometric measurement techniques (weight/height) and replacement of equipment (scales and measuring boards)
- Training of human resources
  - Training for beneficiary parents
  - Training staff in early child stimulation
  - Workshops on child abuse prevention

Clearly, the new administration's plans were to allocate resources to improve most of the aspects identified by the evaluation as needing attention. This highlights the usefulness of operations research approaches for evaluating program implementation and delivery. It also underlines the importance of three key aspects of this type of evaluation that ensure that the information is used for action: (1) the inclusion of the main stakeholders in the design and implementation of the evaluation and in the identification of key research questions; (2) the provision of relevant information to improve decisionmaking processes (our operations evaluation was designed and planned in close collaboration with the acting program management team at the time); and (3) the provision of the information in a timely fashion and to the right people—those who have the power to act.

CHAPTER 7

Impact Evaluation of the *Hogares Comunitarios* Program: Objectives, Design, and Methodology

Objectives

In principle, the HCP offers food, early child stimulation, and care to beneficiary children. To their families, it provides subsidized childcare for extended hours, 5 days a week. Thus, the program is likely to confer a number of benefits to its targeted population, from nutritional, developmental, and school preparedness impacts for the child, to direct economic benefits and better employment opportunities for their parents, and possibly increased chances of attending school for their older siblings. The main focus of the present evaluation is on assessing the impact of the program on the food and nutrient intake of beneficiary children. Because child feeding is such a highly prominent element in the package of services offered by the HCP, priority was given to assessing the program's impact on children's diets.

Another central goal of the program is to assist poor working parents, especially single mothers, with their childcare responsibilities. Thus, it may be that by providing poor women with reliable yet affordable childcare on a daily basis, the program allows them to secure more stable and better-paid employment. Although we had originally planned to directly assess the impact of the program on women's employment characteristics and wages, difficulties with addressing self-selection issues with our study design prevented us from following this objective through (see more on this in the section on study design later). Descriptive information is used, however, to compare the employment characteristics and income of program beneficiary women with those of women from a representative sample of the population in the area of the study. This allows an assessment of the effectiveness of targeting of the program and its coverage.

The impact of the program on children's growth was purposely not measured in this study for a variety of reasons. First, the majority of children participating in the *hogares* are between 2 and 5 years of age. Nutritional interventions beyond the age of 2 years have been shown to have limited, if any, impact on growth (Lutter et al. 1990; Allen 1994; Schroeder et al. 1995). Research has shown that the growth deficits accrued by 2 to 3 years of age among children living in poor environments are largely irreversible and that nutrition interventions have little or no impact on growth beyond 2–3 years of age (Martorell, Kettle Khan, and Schroeder 1994). Therefore, it is unlikely that meaningful growth impacts could be achieved in the population of children served by the HCP.

Another aspect that may limit the potential of the HCP to have an impact on children's growth is the high turnover rate. Children typically stay in the program for less than 1 year. In

the operational evaluation, we found that two thirds of children had been in the program for less than 1 year and one half for less than 6 months. For growth benefits to be achieved, nutritional interventions must be maintained for at least 6–9 months (Rivera and Habicht 1996). Finally, the potential self-selection bias, that is, that the program attracts parents living in more precarious conditions and having more malnourished children, could not be controlled for by the current study design. Without data on children's anthropometric measurements at the time of entry in the program, it was not possible to determine whether their current status was a reflection of how they were when they entered the program or whether it was a result of having been in the program for a given length of time. For these reasons, children's growth was not used as an outcome indicator of the impact evaluation.

It is important to note, however, that although the program may not have had a great potential to improve children's growth for the reasons indicated earlier, it could still have a significant impact on their micronutrient status. Given the amount (and presumed quality) of the food given to children in the *hogares,* it is likely that the program could improve children's intake of essential micronutrients such as vitamin A, iron, and zinc, which are typically low in the diets of Guatemalan children. Our evaluation of the impact of the program on children's diets will help understand the potential of the program to improve the children's micronutrient status. Unfortunately, it was not possible to test the micronutrient status of children directly because it would have required drawing blood. The program administration at the time feared that blood drawing in the *hogares* could negatively affect participation and alter the reputation of the program.

Finally, the impact of the program on children's motor and cognitive development was not assessed mostly because of a lack of resources, but also because of internal restructuring in the program at the time. The administration was in the process of strengthening the psycho-pedagogical activities and was developing a series of materials and training protocols for the staff. This work was still in process when the evaluation started, and thus it was felt premature to assess the impact of the program on children's developmental outcomes at that stage. The weakness of the educational component of the program was also confirmed by results of our operations research (see Chapter 6).

Thus, the key objective of our impact evaluation was to determine the effect of the program on children's diets and nutrient intake. The two additional objectives of the research were to (1) indirectly assess the program targeting, by comparing selected characteristics of beneficiary mothers with those of other working women from the area who used different childcare options; and (2) characterize the types of childcare alternatives used by poor urban dwellers in Guatemala City, and compare their cost to that of the HCP.

Design

The impact of the program on children's dietary intakes was assessed by comparing the diet of beneficiary children to that of their matched controls, using two different matching approaches. The first one involved matching beneficiaries and controls at the time of subject selection (that is, by design), and the second one used the propensity score matching (PSM) approach (that is, matching at the time of analysis). The two approaches are described below. The evaluation also included a random sample survey of the study area (Mixco), which is described below.

Matching by Design: Beneficiary/Matched Control Survey

A cross-sectional beneficiary/matched control survey was used to evaluate the impact of the program on children's diet. Beneficiary

children 2–5 years of age[15] were randomly selected from all *hogares* operating at the time in one zone of Guatemala City (Mixco). The control group, which included nonparticipating children and their households, was selected by individually matching neighborhood children with beneficiary children based on their age (± 3 months), gender, and maternal employment (all mothers from both groups had to be working outside the home, a key eligibility criterion for participating in the HCP). The rationale was to select control children who were as similar as possible to the beneficiaries in their eligibility for the program (child age, gender, and maternal working status) and living conditions (matched on area of residence). It was originally hoped that control children could be selected from waiting lists available in the *hogares* to minimize self-selection bias, but this proved logistically impossible because of the informality of the waiting lists. Control children were therefore selected from the pool of households identified through our census/mapping exercise done prior to drawing a random sample of households with newborn to 7-year-old children in the study area (see section on random sample survey later). Households with a child of the same age and gender as a beneficiary child (± 3 months) and living in the same neighborhood were identified from the list and were then visited to determine whether the mother was working outside the home (a criteria for eligibility as a control child). If eligible, the child was included in the study after receiving verbal consent from the child's mother of her willingness to be included in the study, along with her child.

Matching at the time of subject selection is a widely used approach in epidemiological research, which allows the control for confounding factors at the design stage of a study (that is, by employing some type of subject selection procedure such as restriction), rather than at the analysis stage (for example, by using stratification or multivariate modeling techniques) (Kleinbaum, Kupper, and Morgenstern 1982; Rothman 1986). The objective of matching is to make the "control" group similar to the group of program beneficiaries (in the case of our evaluation) with respect to the distributions of one or more potentially confounding factors. Thus, matching is a type of "partial restriction" on subject selection, which allows us to control by design for some factors that are known to affect the outcome of interest, but that are of no particular interest in the study. For example, child's age is known to affect the main outcome of interest of the study, that is, nutrient intake. However, quantifying the specific association between child age and nutrient intake is of no particular interest in this study, and therefore, constitutes a good matching variable.

Matching on neighborhood of residence (as done in this study) is also widely used in epidemiological research because it is considered an efficient way to adjust for a wide range of social, economic, and environmental factors that would otherwise be difficult to control for (for example, the availability of health, water, and sanitation services at the community level) (Kleinbaum, Kupper, and Morgenstern 1982).

Finally, matching in our study also had to be done on the main criterion of eligibility of women in the HCP, which is that the child's mother works outside the home. Thus, matching of beneficiary children was done on these three criteria: child age, neighborhood of residence, and mother working outside the home.

Matching could have been done on additional criteria such as selected socioeconomic characteristics, maternal schooling, type of employment, and so forth, but

[15] The age group 2–5 years was selected because it is the age range most representative of children in the *hogares.* According to our operational evaluation, more than three quarters of beneficiary children in the *hogares* surveyed were in this age range.

matching on these variables would have prevented us from being able to examine differences between beneficiary and control children on these particular aspects (Kleinbaum, Kupper, and Morgenstern 1982). Thus, because the study aimed at documenting differences between beneficiary and control households in many of these characteristics, it was deemed inappropriate to match on these factors.

The main advantages of matching by design are the following: (1) it is an efficient way to control for a few, carefully selected confounding factors, at the time of design; (2) it can save time and money, compared to drawing a sample from the general population and matching at the time of analysis; and (3) it does not preclude controlling for additional confounding factors at the time of analysis, if necessary. Matching, on the other hand, does not address the potential problem of self-selection bias (in the case of our study, the self-selection of mothers into the program), and thus we had intended to use our random sample data for this purpose (see later).

Propensity Score Matching

Propensity score matching (PSM) was also used to examine the robustness of our results to the choice of matching methods used for generating the control group. This method consists of generating a statistical comparison group by pooling the controls and applying recent advances in PSM methods, following Rosenbaum and Rubin (1983); Heckman, Ichimura, and Todd (1997); and Ravallion and Jalan (1999). PSM estimates are reliable provided that (1) participants and controls have the same distributions of unobserved characteristics (that is, there is no selection bias); (2) support for the comparison and program participants are the same, based on observable characteristics; (3) the same questionnaire is administered to both groups; and (4) participants and controls are from the same economic environment (Ravallion and Jalan 1999).

We used the Stata code written by Leuven and Sianesi (2003) to estimate propensity scores in the participant (that is, children attending the *hogares*) and comparison-group samples; the PSM method then uses the estimated propensity scores to select comparison subjects who are similar to the treatment subjects based on observable characteristics. The propensity score—the probability of being a beneficiary in the program—is estimated as a function of child, mother, and household characteristics (see Chapter 8 for the results of the propensity score estimation). We then use two matching estimators to estimate the average treatment effect, that is, the difference in outcomes between those in the program (treatment) group and the comparison (control) group: (1) the nearest neighbor estimator and (2) the kernel matching estimator (details of these estimators are found in Leuven and Sianesi (2003) and Becker and Ichino (2002).[16] Because failure to compare participants and controls at common values is the single most important source of bias in matching methods (Heckman, Ichimura, and Todd 1997), we restrict our comparison group to the region of common support, that is, at similar values of observed characteristics for both participant and control groups. Finally, we use bootstrapped standard errors with 1,000 replications to assess the significance of the average treatment effect.

[16]We use nearest neighbor matching rather than *m*-neighbor matching since we can draw our statistical comparison group only from those in the matched control group, not a larger survey. Of 511 valid observations without missing data, nearest neighbor matching in the region of common support gives us 250 treatment observations and 123 control observations, a total of 373 observations. Using the kernel matching estimator increases the sample size substantially, to 256 treatment observations and 255 controls, or 505 observations.

Random Sample Survey

A cross-sectional survey of a random sample of households with children newborn to 7 years of age residing in the study area (Mixco) was also conducted. The sample was randomly selected from maps and census data that were updated by our research staff prior to working in the study area.

The purpose of this survey was to gather information on household demographic and socioeconomic characteristics, women's employment patterns, and use of childcare alternatives from a representative sample of the population in the area of the study. This information was to allow comparisons of the sample of beneficiary families with the general population in the area studied, and to indirectly assess program coverage.

We had originally planned to use data from the random sample also to control for self-selection into the program in the evaluation of the impact of the program on women's employment. However, as discussed later, our random sample included only a very small percentage of beneficiaries from the program (3 percent), and therefore the data could not be used for this purpose. However, because we collected information on a wide range of childcare alternatives, we were able to investigate the impact of childcare costs and travel time on maternal labor supply and the choice of formal care in a related paper using the random sample data; see Hallman et al. (2005).

Sample Size Calculations

Beneficiary/Matched Control Sample

Sample size calculations revealed the need to include 60 *hogares* and five participating children per *hogar* to detect a difference of 15 percent in individual energy (i.e., caloric) intake between beneficiary and control children, using a power of 80 percent and an alpha level of 5 percent. Thus, our target sample size was 300 children in each group. In practice, a sample size of 259 pairs was achieved.

Random Survey Sample

The outcome of interest for the random sample was women's labor force participation. Using the DHS data information, we found that a difference of 25 percent would be a reasonable assumption for the effect that the program could have on motivating women to enter the labor force. This effect size is the magnitude of the difference observed in labor force participation among women of low educational level, between those who have children newborn to 6 years of age and those who do not. For this magnitude of difference with an alpha level of 5 percent and a power of 80 percent, the sample size required was 1,266 households. The actual sample size achieved was 1,363 households.

Geographic Location

The impact evaluation was conducted in one of the three zones included in the operational evaluation (Mixco). This zone was selected for several reasons: the area was entirely urban; the operational evaluation results did not reveal any significant differences between the three zones in the acceptability of the program, the quality of services offered, the length of children's stay in the program, or any other operational aspects; and this zone had the fewest security problems likely to endanger the field study team.

Data Collection Methodology

Beneficiary/Matched Control Sample

Three types of data collection approaches were used for the impact evaluation: (1) household survey methods; (2) dietary intake assessment; and (3) maternal and child anthropometric measurements.

Household Survey Methods. These methods were used to gather data on a variety of child, maternal, and household sociodemographic characteristics. These included

household composition; food and nonfood consumption/expenditure; labor force participation of mothers and other household members (employment characteristics and earnings from different sources); household nonlabor income and productive assets; housing conditions and hygiene; and family history and social networks. A list of questionnaire modules is presented in the Appendix.

A community questionnaire was also used to gather information on health facilities, schools, daycare institutions, labor opportunities (factories, markets, and so forth), infrastructure, services (water, sewage, garbage removal, public transport), and market prices.

Child Dietary Intake. Two methods were used to measure child nutrient intake. The first one was direct weighing, which is a highly precise approach to quantify food and nutrient intake (Gibson 1990). This method requires the presence of fieldworkers during meals and the weighing of all foods consumed by the child. In addition, fieldworkers in our study weighed all ingredients used to prepare the food as well as the total amount prepared, so that the exact nutrient composition of all preparations could be assessed. Fieldworkers were present in the *hogar* (for beneficiary children) or at the place of care (for control children) for 10 hours per day, 5 days per week (the official days *hogares* are operating). In most cases, they were able to weigh children's food intake during two meals (breakfast and lunch) and two snacks (morning and afternoon, where applicable).

Quantitative recall methods were used to complement the information obtained through direct weighing. The objective was to assess food intake before and after the 10 hours of direct weighing (that is, during the night preceding the direct weighing and the morning hours before the child was taken to the *hogar* or other place of care). Recall methods were also used to gather complete dietary information on beneficiary and control children during weekends. A 48-hour recall method was designed for this purpose.

Food composition tables developed by the Institute of Nutrition of Central America and Panama/Pan American Health Organization (INCAP/PAHO) (Menchú et al. 1996) were used to calculate energy and nutrient intakes.

Maternal and Child Anthropometry. Maternal and child weights (to the nearest 100 g) using electronic scales were measured, as well as height (to the nearest 0.1 centimeter) using locally made measuring boards. Standard measurement and standardization techniques were used (Habicht, Yarbrough, and Martorell 1979; Lohman, Roche, and Martorell 1988).

Random Sample

Household Survey Methodologies. Similar survey approaches were used to collect data on the random sample, but an abbreviated survey instrument was used. Data were collected on household composition; labor force participation of the mother only; household nonlabor income and productive assets; childcare arrangements (for Monday through Friday only); housing conditions and hygiene; and family history and social networks. No information was collected on household consumption/expenditure (see the Appendix for list of modules used).

The same community questionnaire as in the beneficiary/control survey was used.

Children's Dietary Intake. There was no measurement of children's dietary intake in the random sample.

Maternal and Child Anthropometry. Anthropometric measurements of mothers and all children newborn to 7 years of age were taken, using the methods described earlier. Recumbent length was measured for children younger than 2 years of age and standing height for all other children and mothers.

CHAPTER 8

Key Findings of the Evaluation of the Program's Coverage, Cost, and Impact on Children's Diets

This chapter presents the findings of the impact evaluation. First, the characteristics of beneficiary children and their families are described and compared with those of households from the control group and from the random sample. Aspects related to the targeting and coverage of the program are presented next, followed by a description of the patterns of use and cost of childcare arrangements among our sample of beneficiary and control households. The impact of the program on children's nutrient intakes is discussed next, using both the matched beneficiary/control design and propensity score matching (PSM) methods. The section concludes with an assessment of the potential benefits of the program on another group of women—the program caretakers and their families.

Characteristics of Beneficiary Children and Households

Table 8.1 presents a summary of the sociodemographic characteristics of our sample of beneficiary mothers (n = 259) and compares them with mothers from the control group (n = 259) and the random sample (n = 1,363). Because all beneficiary mothers by definition participate in the labor force, Table 8.1 also provides separate information for the subsample of working mothers from the random sample (n = 504).

Compared to the random sample, beneficiary mothers tended to be slightly less educated, have lower asset values, and live in more precarious conditions (in a room as opposed to an apartment or a house). Beneficiary mothers were also much more likely to be single: 40 percent of beneficiary mothers were single compared to 29 percent among working mothers from the random sample, and 17 percent among mothers from the random sample as a whole. Beneficiary mothers had a smaller household size, but a higher mean number of preschoolers and thus a higher dependency ratio than women from the random sample.

Beneficiary mothers, on the other hand, were more likely than mothers from the random sample to be employed in the formal sector and to work in factories and to receive work-related social and medical benefits. The income of beneficiary mothers in the previous month was also 30 percent higher than the income of working mothers from the random sample. Beneficiary mothers, however, worked on average close to 4 days more than other working women.

Compared to the control mothers, who were selected to be as similar as possible to beneficiary mothers in terms of living conditions and employment outside the home, beneficiary mothers were still worse off in most aspects. Beneficiary mothers were more likely to have malnourished children, to have lower asset values, to live in one room, and to have a higher

dependency ratio. Furthermore, a slightly higher proportion of control mothers were single (45 percent compared to 40 percent among beneficiary mothers). The two groups also differed in the type of employment they were engaged in, with a smaller percentage of control mothers being involved in the formal sector in factories or small businesses (47 percent compared to 62 percent among beneficiaries). Control mothers were also less likely than beneficiary mothers to receive employment benefits, although their monthly income and number of days worked in the past month were similar.

Children of beneficiary mothers were more likely to be stunted and had lower height-for-age *z*-scores than children from the random sample or control group. Since stunting is a cumulative indicator of long-term growth retardation, it is likely that these children had suffered chronic growth retardation throughout their young childhood (and possibly starting from life *in utero*) as a result of a combination of factors including poverty, food insecurity, poor health, and poor maternal care. The fact that beneficiary children were more likely to be stunted should not be interpreted as a result of their participation in the program. As discussed in Chapter 7, without information on the initial nutritional status of children as they entered the program, it is impossible to make inferences about whether their current nutritional status is a result of their life experience prior to entering the program or whether it reflects their participation in the program. Since a large proportion of children in our sample had been in the program for less than 12 months, it is likely that the poorer nutritional status of beneficiary children was mostly a reflection of their past (and current) levels of poverty. Their relatively short stay in the program and their current age (2–5 years of age) may not have allowed them to experience any detectable growth benefits from the program.

In conclusion, in spite of the individual matching of children based on neighborhood of residence, age, gender, and mother's working status, the control and beneficiary groups were not as similar as expected. Beneficiary children appeared to come from more resource-constrained families and they were slightly more likely to be malnourished than control children. In spite of these differences, mothers of beneficiary children were more likely to work in the formal sector than control mothers, although they had slightly lower educational levels, and to receive employment-related benefits. Thus it appears that the program, by providing childcare for children 5 days a week, 12 hours per day, may have increased women's employment opportunities in the formal sector. We investigate the robustness of the results to different matching methods by using PSM to match treated (beneficiary) children with a statistical control group (discussed later). PSM allows us to control for other observable characteristics in addition to neighborhood of residence, age, gender, and mother's working status.

Program Coverage

Program documents indicate that the geographic targeting of the program is based on poverty levels. To set priority areas, the program uses information from the United Nations Development Programme (UNDP) that ranks zones (*municipios*) and departments by poverty level. Once areas are identified, the program establishes quotas and sets a target number of *hogares* to be opened by a certain date in the various regions. At the time of the study, the goal was to achieve 1,500 *hogares* in the country by the end of the year (1998), of which 350 (23 percent) would be in Guatemala City.

Once the quotas are established, staff from the headquarters and social workers operating locally take responsibility for promoting the program in the respective areas. Headquarters staff uses channels such as local leaders, churches, schools, and local radio where available. The social workers work more directly at the community and family level.

Table 8.1 Characteristics of beneficiaries of the *Hogares Comunitarios* Program, compared to the control group and mothers from the random sample

	Beneficiary mothers (n = 259)		Control mothers (n = 259)		Working mothers from random sample (n = 504)		All mothers from random sample (n = 1,363)	
	Mean (or %)	Standard deviation	Mean (or %)	Standard deviation	Mean (or %)	Standard deviation	Mean (or %)	Standard deviation
Child (2–5 years)								
Age (months)	3.5	0.9	3.7	0.9	3.7	1.1	3.6	1.1
Height-for-age z-scores (HAZ)	–1.6	1.0	–1.4	1.1	–1.4	1.2	–1.3	1.1
Percentage stunted (HAZ < –2)	32.0%		29.0%		29.0%		27.0%	
Mother								
Age (years)	28.3	5.7	29.6	7.0	30.5	7.6	28.8	7.9
Years of schooling	5.3	3.2	5.9	3.3	5.9	3.9	5.8	3.7
Percentage single mothers (divorced, widowed, never married)	40.2%		44.8%		29%		17%	
Maternal employment								
Currently working	100%		100%		100%		37.0%	
Works at home	0%		0%		28%			
Type of employment								
Salaried	87.6%		76.8%		50.6%			
Type of job								
Itinerant vendor	6.6%		12.7%		26.5%			
Factory/business	62.5%		46.7%		22.1%			
Domestic work	11.6%		15.1%		23.5%			
Clerical work	3.9%		6.9%		8.4%			
Number of days worked in past month (in up to three jobs)	22.9	4.2	23.6	5.8	19.1	12.5		
Money brought home in past 30 days from up to three jobs[a]	US$139	US$63	US$142	US$84	US$107	US$93		
Received benefits								
Medical insurance	10.4%		6.6%		4%			
Social security	72.6%		59.5%		33%			
14th-month pay	80.7%		69.9%		40%			
Vacation	74.1%		61.0%		36%			
Mean number of benefits	4.4	2.2	3.8	2.5	2.2	2.6		

Household								
Household size	4.2	1.5	5.8	2.4	5.3	2.3	5.2	2.1
Number of preschoolers	1.9	0.8	1.9	1.0	1.6	0.7	1.5	0.7
Dependency ratio	1.1	0.7	0.8	0.6				
Value of assets per capita	US$1,155	US$2,618	US$1,321	US$1,800	US$1,359	US$1,763	US$1,516	US$2,469
House ownership								
Owns	11.2%		20.1%		20.0%		19.3%	
Rents	73.0%		47.1%		46.8%		47.1%	
Other	14.3%		28.2%		33.1%		33.5%	
Housing arrangement								
Lives in room	56.8%		31.7%		33.5%		36.0%	
Lives in house	22.4%		44.8%		44.6%		44.8%	
Living arrangement								
Nuclear family	18.9%		37.5%		37%		32%	
Several households (related)	25.1%		37.1%		34%		47%	
Several unrelated households	53.7%		21.2%		23%		24%	

[a]The average exchange rate during the study period was 6 quetzales (Q6 = US$1).

In theory, the process of opening a *hogar* consists of a group of parents selecting a woman from their community to become the program caretaker. As a group, they submit an application, which is processed. This is followed by visits from the program staff to the designated caretaker and to all proposed beneficiary parents to confirm their eligibility. In practice, many program caretakers indicated that they found out about the program through a variety of channels (schools, friends or relatives, and so forth), and decided to attend the training offered by the program for future caretakers. Once they had received the training, they started gathering families who were interested in participating in the program and then submitted an official application. Thus, both beneficiary parents and caretakers are self-selected.

To be eligible for the program, families must be of low income, the mother must be able to prove that she is employed outside the home (or has 2 weeks to find employment), and they must have a child younger than age 7. There are no eligibility criteria based on race, migrant status, age, or family structure other than having a preschooler.

Although our research was not designed specifically to assess the overall coverage of the program, the descriptive results presented in Table 8.1 provide some insight regarding coverage in the area studied. When comparing sociodemographic characteristics, it is clear that beneficiary mothers are more resource constrained; they are more likely to be single compared to mothers from the random sample; they have smaller household size and number of adult members but a higher number of preschoolers, and thus higher dependency ratios; they are less likely to own a house; and the value of their assets is lower. This is true also when comparing beneficiary mothers to the group of working mothers from the random sample. Thus, it would appear that the program is indeed reaching its targeted population—that is, households with scarce resources and malnourished children, and, more important, single women who need to work to ensure their livelihood and household food security. It is likely that the program is particularly attractive for single mothers with limited childcare alternatives because it provides reliable and affordable childcare for 12 hours a day, and allows them to engage in more formal, and possibly more stable, employment. This is confirmed by the data presented in Table 8.1, which show that 62 percent of beneficiary mothers are engaged in formal employment (small factory/business) compared to only approximately 22 percent among working mothers from the random sample. As a result, beneficiary mothers have a greater income and are much more likely to receive a number of social and medical employment benefits than working women who use other childcare alternatives.

Analysis of the random sample, however, revealed a very low coverage of the program in the general population. Only 3 percent of working mothers from the random sample were beneficiaries of the program. This low coverage seems to result from inadequate supply rather than low demand. This was highlighted in the focus groups with the caretaker mothers who indicated having no problems getting new children when some dropped out of the program. Many reported being able to replace a child within 24 hours. Some also indicated having waiting lists, or that parents regularly stopped by the *hogar* to request their services.

We also collected information on whether mothers had heard about the program, and if so, why they were not using it. For those who had not heard about it, we described the program and asked whether they would be interested in such a program if a *hogar* was available in their community. Table 8.2 summarizes the findings. Only mothers working outside the home are included in this table, because women working at home are not eligible.

More than half of the working mothers from the random sample had heard about the program. Among those who had, the most common reason for not using it was that they had an alternative caretaker at home

Table 8.2 Reasons why mothers do not use the *Hogares Comunitarios* Program or would not use it even if space were available (random sample)

	Mothers working outside the home (n = 348)[a]	
Reasons why does not use or would not use	***N***	***%***
Knew about the program	205	58.9
Any child ever in the program	23	6.6
Reason child not in program	(n = 179)	
Expensive	2	1.1
Program has bad reputation	11	6.1
Does not trust caretaker	14	7.8
Does not know caretaker	3	1.7
Too many children in *hogar,* poor attention	4	2.2
Children not well taken care of, not safe	11	6.1
Children are not taught anything	1	0.6
Schedule too inflexible	7	3.9
Does not need it, has caretaker at home	94	52.5
Hogar is too far away	9	5.0
No opening in the *hogar*	8	4.5
Child does not like this type of daycare center, not used to it	4	2.2
Other	11	6.1
Would register child in *hogar* if space were available	64	44.8
Reason why would not register child in hogar	(n = 78)	
It is too expensive	1	1.3
Program has bad reputation	6	7.7
Does not trust caretaker	10	12.8
Too crowded, poor quality of attention	2	2.6
Children not well taken care of, not safe	3	3.8
Children are not taught anything	1	1.3
Schedule is too inflexible	46	59.0
Does not need it, has caretaker at home	1	1.3
Would use if one was close by	5	6.4
Child does not like, is not used to this type of childcare	3	3.8
Other		

[a]Only mothers who worked outside the home were included in this analysis because mothers working at home are not eligible for the HCP.

(52 percent). Other reasons given for not using the program were mistrust of the program, the caretakers, or the quality of services; lack of flexibility of the schedule; and lack of space in the program. When the hypothetical question was asked to mothers who had not heard about the program whether they would be interested, 45 percent responded that they would be. Among those who said they would not use it, the same pattern of answers as that described for mothers who knew about the program but did not use it was given: more than half replied that they did not need the service because they had childcare available at home, and the remaining answers showed a similar distribution as among mothers who had heard about the program.

These findings suggest that, although approximately half of working mothers in this marginal area of Guatemala City were not interested in using the program (mainly because they did not feel they needed the service), there was still a large proportion of the population who would be willing to participate. It is also possible that some of

the women who are currently not working would decide to join the labor force if they had a childcare opportunity like the HCP made available to them.

Thus, the current low coverage of the program seems to reflect an insufficient supply rather than a low demand. Promotion of the program and improvement of its image could further increase demand.[17] The question that the administration needs to answer is whether or not they have the capacity and willingness to increase their coverage in Guatemala City, or whether they want to continue to expand in rural areas.

Patterns and Cost of Childcare in Guatemala City

The types of childcare arrangements used on weekdays by families from our impact evaluation sample are listed in Table 8.3. The comparison groups for this table are the beneficiary families and their matched neighborhood controls. Note that the percentages add up to more than 100, because many parents use more than one childcare arrangement (27 percent of the beneficiaries and 18 percent of the controls do). The fact that beneficiary parents resort to other childcare arrangements during the week reveals that they are generally absent from their home for even longer hours than the 12 hours offered by the HCP. Thus, even a program like the HCP, which is close to the beneficiaries' homes and open for extended hours, is insufficient to meet the needs of many parents in these poor environments.

The most popular alternative childcare used by beneficiary mothers in addition to the program was resident family members, who were used by 16 percent of beneficiary mothers. Resident household members were used even more widely by control households (more than one half used them), and close to one third of them also used nonresident relatives (the second most popular childcare alternative among this group).

The resident household members more commonly used differed between the beneficiaries and the control group: among beneficiaries, male heads predominated, whereas among the control group, grandmothers prevailed (results not shown). Female siblings aged 7–15 years were the second most common resident family members taking on childcare responsibilities in both groups. Note, however, that for beneficiary households, relatives (resident or nonresidents) were used only for a few hours (three, on average) to complement the hours children spent in the *hogar,* whereas among the control group, relatives spent, on average, 10–11 hours per day as the main caretakers.

Babysitters, neighbors, and other arrangements were much less popular childcare alternatives than relatives in this population, and this was probably due to a combination of factors, including cost and issues of trust. Two percent of our control households left their child at home alone, without a caretaker. This was far from representative of the true prevalence of this practice in the area, however, because a large number of families who left their child alone refused to participate in the study. Thus our sample underestimates the importance of this desperate measure.

Table 8.3 also presents the monthly cost paid for the different types of childcare arrangements (among those who used them and paid for them). Note that the average price paid for the HCP was US$7.23, as opposed to the official price of US$5. Only 44 percent of beneficiaries paid the required

[17]Confusion existed between HCP and another subsidized daycare program managed by a separate governmental entity. The latter program used a large daycare center modality, rather than the community daycare center approach, and had recently been criticized in the press. This resulted in the closing of many of the centers and caused a general mistrust of all government-sponsored daycare programs.

Table 8.3 Childcare arrangements used by beneficiary and control households on weekdays (Monday through Friday) and their cost

	Beneficiaries (n = 259)		Control (n = 259)	
Type of childcare arrangement	**Percentage who use**	**Cost/month (US$)**	**Percentage who use**	**Cost/month (US$)**
Resident household member	15.8	—	57.5	4.69 (n = 148)
Nonresident grandmother	3.1	4.17 (n = 8)	18.5	12.85 (n = 48)
Nonresident aunt	1.9	—	10.0	11.31 (n = 23)
Nonresident other relative	0.8	—	2.3	11.47 (n = 6)
Neighbor	5.0	3.61 (n = 12)	6.9	12.80 (n = 18)
Babysitter	0.4	0.42 (n = 1)	12.7	6.66 (n = 33)
Other person	0.4	5.05 (n = 1)	1.5	37.15 (n = 4)
Child left alone	0.0	—	1.9	—
Hogar comunitario (HCP)	100.0	7.23 (n = 257)	0.0	—

Notes: The average exchange rate during the study period was 6 quetzals (Q6 = US$1). Note that percentages add up to more than 100 percent because many households used more than one arrangement.
The cost/month is an average of the cost among those who did pay for the service. Some households, for example, did not pay for help from resident or nonresident household members, while others did.

US$5, one third paid US$5.83, and the remainder paid between US$6.17 and US$25. The main reasons for these price variations are twofold. First, as revealed by the operations research, some caretakers admitted charging their "clients" more, and parents agreed to pay these higher amounts. Second, many parents had special arrangements with the caretakers to leave their children in the *hogar* after hours, and in some cases, overnight or even for weeks at a time.

Other types of paid childcare arrangements that beneficiary parents used to complement the 12-hour service offered by the program included nonresident grandmothers, neighbors, and other babysitters. The average cost of these services among those who paid for them was more than half the price they paid for the HCP, in spite of the fact that they used them for only a few hours a day.

Compared to other childcare arrangements used by the control households, the HCP was one of the least expensive alternatives. The average monthly cost of the HCP was even lower than the average cost these households paid for nonresident relatives. Table 8.4 summarizes the cost information by showing the average monthly cost paid in childcare (for up to three types of arrangements) by beneficiary and control households, separately for weekdays and weekend days, and for amounts paid in cash versus in-kind. Overall, the total amount paid in childcare during weekdays by beneficiary households was, on average, only 11 percent higher than the price paid by the control group, in spite of the fact that control households relied principally on relatives. Saturday care was an additional cost, and it appeared to be particularly high for beneficiary parents. Up to 72 percent of beneficiary households reported expenses on Saturday care, which averaged US$2 in cash and US$0.60 in kind. This cost represents approximately 19 percent of the amount they paid for the monthly service of the HCP plus the other arrangements they used on weekdays. Among the control group, the total amount paid on Saturdays (including cash and in-kind) was only US$0.40, which represents a low 3 percent of the amount paid by the control group for weekday care.

The issue of weekend childcare costs for beneficiary parents was discussed in the

Table 8.4 Comparison of the mean monthly cost (US$) of childcare paid by beneficiary and control households

	Beneficiary		Control	
	Mean	Standard deviation	Mean	Standard deviation
Monday through Friday	*n* = 257		*n* = 256	
Cash	9.58	7.42	8.77	13.77
In-kind	4.23	10.12	3.65	8.52
Total	**13.81**	**12.38**	**12.42**	**18.45**
Saturday	*n* = 186		*n* = 197	
Cash	2.00	3.07	0.20	1.20
In-kind	0.60	1.87	0.20	0.67
Total	**2.60**	**4.94**	**0.40**	**1.87**
Sunday	*n* = 27		*n* = 64	
Cash	0.27	1.27	0.20	1.13
In-kind	1.00	3.13	0.13	0.53
Total	**1.27**	**4.40**	**0.33**	**1.67**

operations research section of this report (Chapter 6), and remains an issue for the program to address. One fifth of the beneficiary mothers resorted to the program caretakers on weekends for an average of 7 hours, at an average cost of US$5 per month. This roughly doubled the amount of their monthly cost of participation in the program. Clearly, this additional fee was disproportionately high, considering that it covered only an additional 28 hours (four part-time Saturdays), or the equivalent of 2.33 normal 12-hour weekdays. It is obvious that mothers who resorted to this measure had no other alternative. Other weekend arrangements used by beneficiary mothers generally involved relatives and were less expensive, but they were rarely free of charge.

Overall it appears that the HCP is truly a low-cost childcare arrangement, even compared to informal alternatives involving household members or extended family members. Although the program's services are available for extended hours, many of its users still require additional help with childcare, often at a high cost. As a whole, the program appears to be reaching its targeted population—poor families who do not have access to informal childcare possibilities—but the services offered seem to only partially fulfill the childcare support needs of this vulnerable and resource-constrained population.

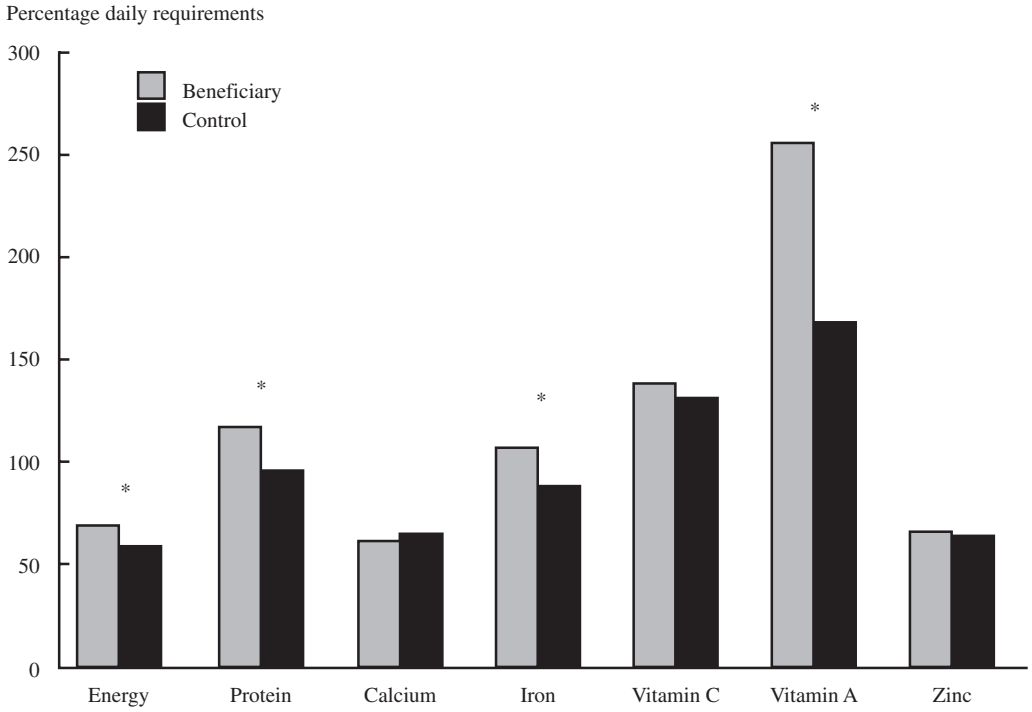
Impact of the Program on Beneficiary Children's Diets

The impact of the program on children's dietary intakes was assessed by comparing the diet of beneficiary children to that of their matched controls, using two different approaches to matching, as described in Chapter 7. We first present the results obtained using the beneficiary/control matching done at the time of subject selection. The robustness of the findings is then tested using a second approach, PSM. Outcomes compared are identical across methods.

Diets at the place of care during weekdays (at the *hogares* for beneficiary children and at their respective place of care for control children) were compared between the groups, as well as diets during weekends.

Diets at the place of care were measured through direct weighing and weekend diets were assessed using a 48-hour recall approach. Dietary intake before and after the 10-hour direct weighing done on weekdays

Figure 8.1 Comparison of percentage of daily nutrient requirements met by beneficiary and control children (during their stay in place of care on weekdays)



Note: * denotes a statistically significant difference (paired *t*-test; $p < 0.05$).

was also assessed using a 24-hour recall approach.[18,19]

Results Using the Beneficiary/ Matched Control Design

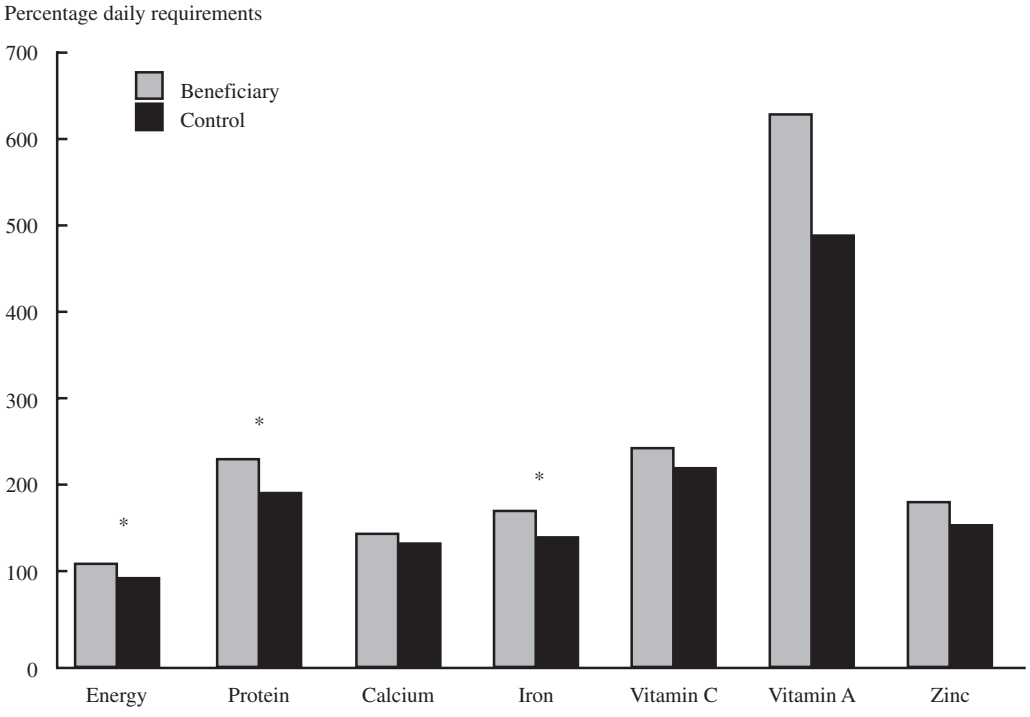
Figure 8.1 shows that beneficiary children have a much better quality diet during weekdays than children who are using alternative childcare: beneficiary children consumed, on average, 20 percent more energy, proteins, and iron, and 50 percent more vitamin A than control children at their place of care.[20] There was no evidence of substitution at home, as seen by the weekend diet, which was, in general, slightly superior among beneficiary compared to control children (although differences assessed by paired *t*-tests reached statistical significance only for energy, protein, and iron) (Figure 8.2). The morning and evening diet during weekdays (outside of the place of care) was also significantly richer among beneficiary children in all nutrients except vitamins C and A (Figure 8.3). Thus, in view of the lack of apparent substitution in the home diet, overall, the quality of the diet of beneficiary

[18] Because diets measured at the place of care covered only 10 hours a day, they were not expected to provide 100 percent of children's nutrient requirements. Parents were expected to complement the diet, at least with an evening meal.

[19] The children's percentage of daily requirements was calculated using recommended daily allowances (RDAs) for Guatemalan children (Torún, Menchú, and Elías 1994) because the new Dietary Reference Intakes (DRIs) (IOM 2000) were not available at the time of the analysis.

[20] Note that vitamin A intakes are very high because the study took place during the mango season. In the *hogares,* children were also fed beef liver on a regular basis.

Figure 8.2 Comparison of percentage of daily nutrient requirements met by beneficiary and control children (during weekends at home; 48-hour recall)



Note: * denotes a statistically significant difference (paired *t*-test; $p < 0.05$).

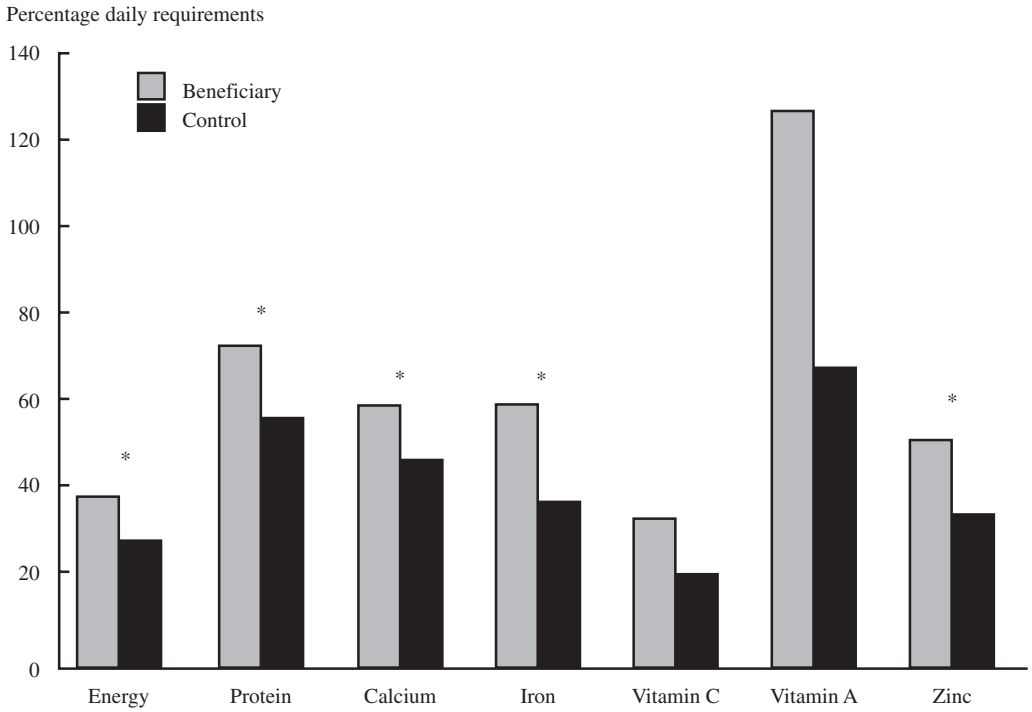
children is significantly greater than that of the nonbeneficiary children.

Another important aspect that contributes to the higher quality of the diet of beneficiary children is the fact that a greater proportion of their iron and vitamin A intake during weekdays (at the *hogar*) came from animal, as opposed to plant, products (Figures 8.4 and 8.5). The iron and vitamin A contained in animal products are significantly more bioavailable (that is, better absorbed and utilized by the body) than those contained in plant foods (Sommer and West 1996; Allen and Ahluwalia 1997). In addition, even relatively small amounts of red meat and poultry consumed along with plant foods are known to significantly enhance the absorption and utilization of the iron contained in plant foods consumed at the same meal. Thus, the fact that children in the HCP not only consumed higher amounts of vitamin A and iron, but also consumed 28 percent more of their iron and 21 percent more of their vitamin A from animal sources than control children, is likely to have a significant impact on their vitamin A and iron status.

A finding that raises some concern is the fact that close to half of the vitamin A intake of beneficiary children is contributed by sugar, which is fortified with vitamin A in Guatemala. From the dietary data information collected, it seems the relatively high consumption of sweetened homemade fruit juices in the *hogares* explains this finding. Although fruit juices also contain some natural vitamin A and other micronutrients, it would be important for program staff to educate caretaker mothers to exert moderation when adding sugar to drinks prepared for children.

Our findings confirm that the overall benefits of the HCP on children's dietary quality are large, especially with regard to

Figure 8.3 Comparison of percentage of daily nutrient requirements met by beneficiary and control children (before and after their stay in place of care on weekdays; 24-hour recall)



Note: * denotes a statistically significant difference (paired *t*-test; $p < 0.05$).

Figure 8.4 Contribution of selected food groups to iron intake (weekdays at place of care)

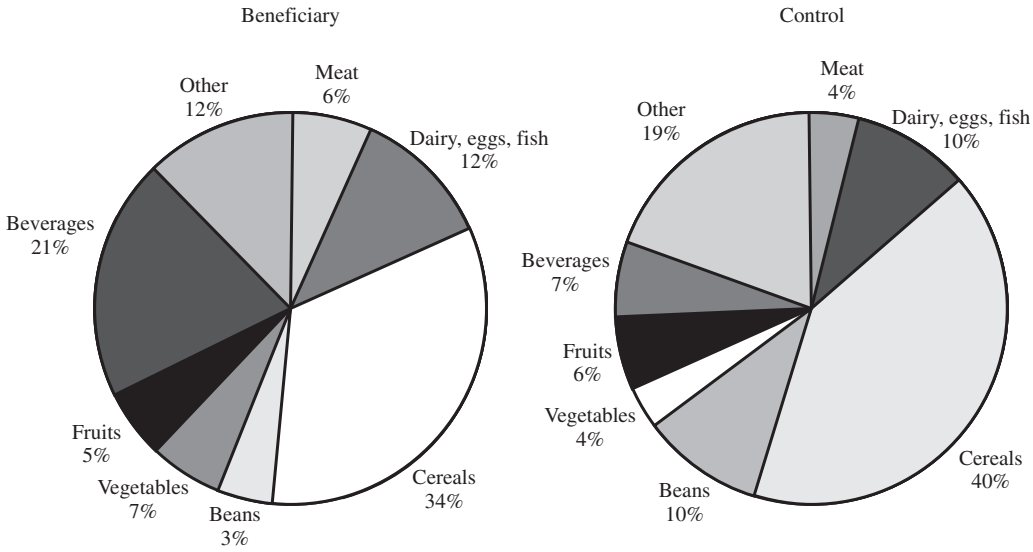
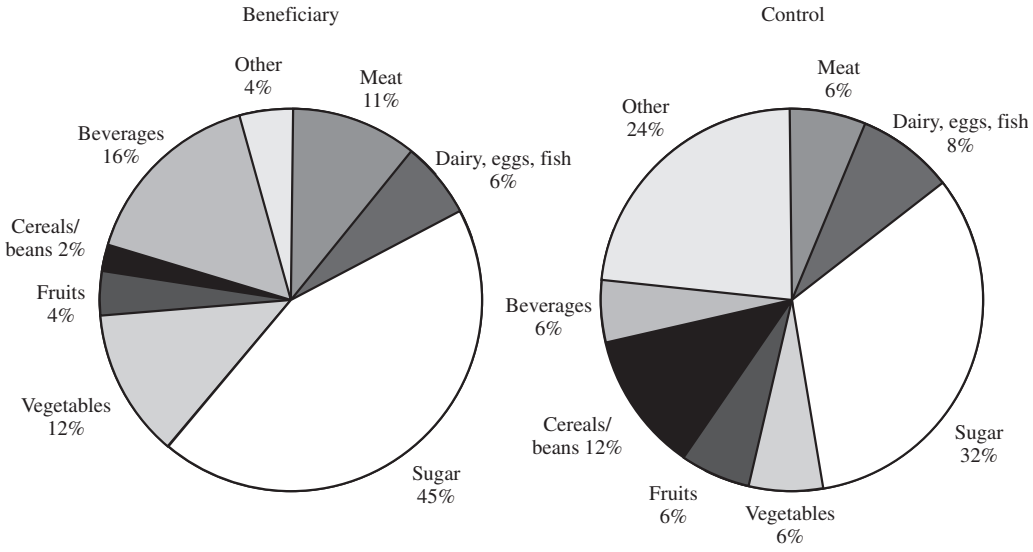


Figure 8.5 Contribution of selected food groups to vitamin A intake (weekdays at place of care)



micronutrient amounts and bioavailability, and are not attenuated by problems of substitution and poor diet at home. Similar findings were documented by Jacoby (2002), in relation to a school feeding program in the Philippines. Children participating in the school feeding program received the same diet at home as nonparticipants, and thus the program had a net impact on children's nutrition, although it did not provide an income transfer to the family.

The benefits of the HCP on preschoolers' micronutrient intakes are particularly important because micronutrients, especially vitamin A, iron, and zinc,[21] are the most widespread nutrient deficiencies among this age group (ACC/SCN 2000). Although vitamin A deficiency has declined in Guatemala since the re-enforcement of sugar fortification in the early 1990s, it continues to be a major health problem along with iron and zinc deficiencies (Ruel et al. 1997; Rivera et al. 1998; ACC/SCN 2000; Population Health and Nutrition Information Project 2000). Deficiencies of zinc and iron may weaken the immune system and increase the incidence and severity of diarrhea and respiratory infections, two main causes of childhood mortality in developing countries, and may also impair growth and motor and cognitive development. Unfortunately, blood samples could not be drawn in our study to verify the impact of the program on children's micronutrient status. However, with such large improvements in micronutrient intakes and with the documented greater contribution of animal (more bioavailable) sources of vitamin A and iron, the program has a large potential to improve preschoolers' micronutrient status. To maximize the impact, however, efforts should be made to maintain children in the program for extended periods. The high mobility of poor urban dwellers and the instability of maternal employment (mothers have to be working outside the home to be eligible for the program) results in high turnover rates in the HCP, which, in turn, is likely to limit

[21] The difference between beneficiaries and control in zinc intake was positive, but it reached statistical significance only for the morning/evening diet.

its potential nutritional benefits. As noted before, more than half of the beneficiary children in our sample had been in the program for less than a year, and one third for less than three months.

PSM Results

Table 8.5 presents probit estimates of the probability of being in the *Hogares Comunitarios* Program. The propensity score—the probability of being a beneficiary in the program—is estimated as a function of child age and gender, mother's age, mother's years of schooling, mother's work experience, whether the mother is single, whether she is indigenous, whether she is a salaried worker (as opposed to being a daily wage or piece-rate worker or self-employed), whether she works full-time (more than 22 days in the past 30 days), household demographic characteristics such as household size, the percentage of preschoolers in the household, the percent of adults in the household, the value of household assets, and whether the family resides in their own house, together with neighborhood controls. Instead of presenting probit coefficients, Table 8.5 presents marginal effects, which allow us to compare the magnitude of the effect of the different regressors on the probability that a child is in the *Hogares Comunitarios* Program. Interestingly, mother and household characteristics, not child characteristics, are the most important determinants of program participation. The most significant variables, in terms of the magnitude of their effects, are the percentage of preschoolers in the household (positive), the percentage of adults (negative), whether the mother is indigenous (positive), whether she is single (negative), and whether she holds a salaried job (positive). Working full-time does not have an independently significant effect on the probability of the child being in the *Hogares Comunitarios* Program.[22]

Table 8.6 presents the average treatment effect of HCP participation on the diets of beneficiary children using PSM, while Table 8.7 compares the results with those obtained using the matched beneficiary controls. Despite the difference in matching methods, the results are remarkably consistent. Both nearest neighbor estimates and kernel matching estimates are completely consistent with the paired *t*-test results comparing the effect of HCP on the percentage of daily nutrient requirements during their stay in the place of care on weekdays. Comparisons of the effect of the program on weekend diets are also consistent for the kernel matching estimates, with the exception of weaker significance of the effects on iron ($p < 0.10$ rather than $p < 0.05$ using paired *t*-tests). For the nearest neighbor estimates, the results for energy and iron differ from the paired *t*-test results, since they are insignificant rather than significant at $p < 0.05$ using paired *t*-tests). The general consistency of the paired *t*-tests with kernel matching estimates rather than with nearest neighbor estimates may be partly due to the substantially smaller sample size created by the nearest neighbor matches. We have only 373 observations for nearest neighbor matching but 505 observations for kernel matching.

Comparisons of weekday diets before and after the children's stay in the place of care are the least similar. The significance based on nearest neighbor matching tends to be weaker (for example, significant at $p < 0.10$ instead of $p < 0.05$) for three out of seven comparisons; the effect on energy is not significant (whereas it is significant using paired *t*-tests) and the effect on vitamin C intake is significant in contrast to the matched pairs results. Three out of seven comparisons (energy, iron, and vitamin A) using kernel matching yield identical results with matched pairs; for calcium and zinc, the

[22] We also tried a specification in which we used days worked in the past 30 days as a regressor, but the results are qualitatively similar and are not reported here.

Table 8.5 Probit regressions of participation in the *Hogares Comunitarios* Program (robust standard errors; marginal effects reported)

	dF/dx	*z*
Gender of child[a]	0.002	0.05
Age of child in months	–0.001	–0.53
Age of mother in years	0.001	0.15
Mother's years of schooling	–0.007	–0.92
Mother's experience	0.000	–0.09
Mother holds a salaried job (=1)[a]	0.149	**1.96**
Mother works full-time (more than 22 days a month)[a]	–0.040	–0.79
Mother is single[a]	–0.153	**–2.82**
Mother is indigenous[a]	0.205	**2.33**
Household size	–0.095	**–5.51**
Percent of preschoolers in household (≤7 years)	0.493	**2.09**
Percent of adults in households (≥15 years)	–0.476	**–2.01**
Value of household assets	0.000	0.24
Mother owns the house[a]	–0.025	–0.32
Neighborhood dummies (El Milagro excluded)		
Carolingia	–0.047	–0.53
Lo de Bran	0.315	1.30
Belen	–0.162	–1.48
Santa Marta	–0.146	–1.25
La Florida	0.063	0.34
Montserrat	–0.207	–1.56
La Brigada	–0.098	–1.00
San José Los P.	–0.215	–0.80
Mixco (centro)	–0.041	–0.30
Ciudad Satelite	0.008	0.09
Perez Guisasola	–0.054	–0.29
La Comunidad	–0.058	–0.49
Las Brisas	–0.058	–0.44
Carolingia (annex)	0.144	0.56
Observed probability	0.50	
Predicted probability	0.49	
Number of observations	511	
LR chi^2 (26)	98.06	
Probability > chi^2	0.00	
Pseudo R^2	0.17	

Note: *z* corresponds to the test of the underlying coefficient being 0. *z*-statistics in bold are significant at 5% or better.
[a]*dF/dx* is for discrete change of dummy variable from 0 to 1.

result using kernel matching indicates the average treatment effect is not significant, whereas it is significant using matched pairs, and for vitamin C, the average treatment effect (ATE) is significant whereas the program effect is not significant using matched pairs. While there are differences between PSM and matching by design, we must also point out that different matching methods within PSM—here, nearest neighbor and kernel matching—also yield different results.

Despite the differences in results between PSM and matching by design, and between matching methods within PSM, it is heartening to note that the positive impact of the program on energy, protein, iron, and

Table 8.6 Average treatment effect (ATE) of *Hogares Comunitarios* Program participation on program participants, propensity score matching method (bootstrapped standard errors, 1,000 replications)

	Nearest neighbor estimates No. of control children = 123[a] No. of treated children = 250					Kernel matching estimates No. of control children = 255[b] No. of treated children = 250				
	ATE	95% confidence intervals[b]		Standard error	*t*-value	ATE	95% confidence intervals		Standard error	*t*-value
Effect on percentage of daily nutrient requirements during the children's stay in place of care on weekdays										
Energy	12.73	7.16	18.19	2.84	**4.49**	12.38	7.94	16.22	2.13	**5.82**
Protein	29.93	22.67	47.07	6.18	**4.84**	25.66	17.15	34.39	4.44	**5.78**
Calcium	2.82	–6.13	18.29	7.02	0.40	–1.88	–11.91	6.58	4.62	–0.41
Iron	23.46	7.12	36.32	8.00	**2.93**	21.65	7.82	30.91	5.46	**3.97**
Vitamin C	9.24	–23.23	44.55	19.06	0.48	1.86	–28.69	25.33	13.01	0.14
Vitamin A	79.61	19.02	120.81	24.75	**3.22**	85.22	48.64	126.45	19.72	**4.32**
Zinc	10.76	5.83	22.92	6.45	1.67	4.16	–4.27	12.51	4.28	0.97
Effect on percentage of daily nutrient requirements during weekends at home, 48-hour recall										
Energy	30.20	–2.68	46.88	41.30	0.73	23.6	5.5	41.3	9.4	**2.51**
Protein	58.64	–4.11	117.57	29.52	**1.99**	57.5	13.5	96.3	21.4	**2.69**
Calcium	30.20	–41.00	113.48	41.30	0.73	14.7	–46.6	65.3	28.9	0.51
Iron	33.34	–42.04	73.40	25.85	1.29	33.3	–11.5	66.3	19.4	1.72
Vitamin C	–38.05	–197.68	85.93	71.23	–0.53	–33.9	–129.6	67.8	51.9	–0.65
Vitamin A	179.83	–639.35	701.21	318.50	0.56	177.7	–300.6	641.6	255.0	0.70
Zinc	33.36	–88.79	121.44	53.46	0.62	20.7	–96.9	79.7	38.5	0.54
Effect on percentage of daily nutrient requirements before and after the children's stay in place of care on weekdays, 24-hour recall										
Energy	4.74	–2.26	9.42	3.06	1.55	5.3	–0.1	9.4	2.3	**2.30**
Protein	12.27	2.98	28.90	6.72	1.82	8.7	–0.5	18.4	4.9	1.77
Calcium	15.64	7.35	31.99	8.28	1.89	9.2	–1.5	21.4	5.9	1.57
Iron	12.46	1.69	20.24	5.10	**2.44**	13.4	3.6	20.2	4.0	**3.36**
Vitamin C	17.93	7.68	39.88	7.94	**2.26**	14.7	3.2	29.5	6.8	**2.17**
Vitamin A	6.45	–38.74	20.67	20.28	0.32	9.5	–17.9	24.6	18.5	0.51
Zinc	10.69	30.09	2.52	6.49	1.65	5.9	–3.1	17.5	5.2	1.14

Note: *t*-values in bold denote a statistically significant difference ($p > 0.05$).

[a]The number of treatment and controls refers to the actual number of nearest neighbor matches in the region of common support.

[b]The number of treatment and controls refers to the actual number of kernel matches in the region of common support.

[c]Confidence intervals are bias corrected.

vitamin A intake during weekdays at the place of care is robust to the choice of matching method, and that, despite slightly weaker levels of significance, the finding of nonsubstitution is confirmed.

The Caretaker Mothers: Other Beneficiaries of the Program?

It is important to note that the HCP also provides important benefits to the caretaker mothers and their families. Caretaker mothers are clearly different from the general population and from beneficiary mothers. They are women of a relatively higher socioeconomic status (as seen by their better housing conditions and greater availability of services) and they are well established in their community, having lived there for an average of 17 years. Caretaker mothers are also older (averaging 43 years) and have lower levels of education (average 4 years of schooling; 15 percent have never attended

Table 8.7 Comparison of propensity score matching methods with paired beneficiary-control results

	Comparison of results with paired beneficiary-control results	
	Nearest neighbor estimates	**Kernel matching estimates**
Effect on percentage of daily nutrient requirements during the children's stay in place of care on weekdays		
Energy	Same	Same
Protein	Same	Same
Calcium	Same	Same
Iron	Same	Same
Vitamin C	Same	Same
Vitamin A	Same	Same
Zinc	Same	Same
Effect on percentage of daily nutrient requirements during weekends at home, 48-hour recall		
Energy	Not significant; paired significant at $p < 0.05$	Same
Protein	Same	Same
Calcium	Same	Same
Iron	Not significant; paired significant at $p < 0.05$	$p < 0.01$; paired significant at $p < 0.05$
Vitamin C	Same	Same
Vitamin A	Same	Same
Zinc	Same	Same
Effect on percentage of daily nutrient requirements before and after the children's stay in place of care on weekdays, 24-hour recall		
Energy	Not significant; paired significant at $p < 0.05$	Same
Protein	$p < 0.10$; paired significant at $p < 0.05$	$p < 0.10$; paired significant at $p < 0.05$
Calcium	$p < 0.10$; paired significant at $p < 0.05$	Not significant; paired significant at $p < 0.05$
Iron	Same	Same
Vitamin C	$p < 0.05$; not significant at $p < 0.05$ with matched pairs	Significant, not significant at $p < 0.05$ with matched pairs
Vitamin A	Same	Same
Zinc	$p < 0.10$; paired significant at $p < 0.05$	Not significant; paired significant at $p < 0.05$

school) than women from the random sample. Thus, employment opportunities for this group of women may be limited and the HCP probably constitutes a unique opportunity for them to generate income while working at home and taking care of their own children or grandchildren.

More than half of the caretaker mothers had at least one child or grandchild in the program, and some had up to three, although the program tries to limit the number to two. As documented in the operational evaluation results (Chapter 6), caretaker mothers may also benefit from the program by using the cash transfers and the food donations to feed their whole family in addition to the beneficiary children (some of which are their own). Finally, caretaker mothers receive a monthly incentive of US$83.33 (when their *hogar* is operating at full capacity), which is only about 22 percent lower than the average monthly income of working mothers from the random sample.

On the other hand, it is important to recognize that caretaker mothers work long hours and use their own resources—house, furniture, equipment, supplies, and electricity. Even more important, they share the workload and responsibilities of managing the *hogar* with their whole family. All program caretakers reported receiving help from at least one family member in managing the *hogar,* and some had as many as five helpers, mostly their own children. In 37 percent of the *hogares,* at least one of the helpers was younger than 10 years of age.

On average, caretakers received help for up to 52 hours per week.

Thus, the *hogar* is truly a family enterprise, and it is impossible to determine whether the net benefits of the program for caretaker mothers and their families are positive. It would seem that they are, and that the program provides benefits both to beneficiary mothers as well as to many of the caretakers themselves.

CHAPTER 9

Conclusions and Implications for Urban Programming

Key Findings

Our evaluation revealed that the HCP is a carefully designed, relatively well-implemented program that is much appreciated by its users and main implementers. The program reaches its targeted audience—families of working parents with limited resources—particularly families in which mothers are the main income generators.

The program seems to benefit two distinct groups of poor urban women. First, it benefits mothers of participating children, who are mostly young working mothers, many of whom are single. In spite of their lower educational levels and more precarious living conditions, mothers of beneficiary children are more likely to be employed in the formal sector and to be helped by work-related social and medical benefits. Their income in the month prior to the survey was also 30 percent higher compared to that of other working women from the same area. Thus, it appears that, by providing reliable and affordable childcare facilities for extended hours, the HCP allows women (especially single women) to engage in more formal, and possibly more stable and better remunerated, employment, providing greater social and health benefits.

The second group of women who appear to benefit from the program are the program caretakers. These women, who are on average older and less educated, may have limited opportunities to work outside the home. They benefit from the program by generating some income (albeit low), while taking care of their own children or those of other relatives and providing childcare services to their community.

The HCP is also significantly associated with greater diet quality among participating children, especially with regard to essential micronutrients such as iron, zinc, and vitamin A. Not only was the diet of children in the *hogares* more nutritious than that of children in other childcare arrangements, there was also no evidence of substitution at home. On the contrary, the home diets of beneficiary children were significantly higher in energy, protein, and iron than the home diets of children whose working mothers used other types of childcare. In addition, a greater proportion of the iron and vitamin A consumed in the *hogares* came from animal sources, as opposed to plant products, and thus is easier for the body to absorb and utilize. These dietary improvements may have substantial benefits for young children, over both the short term and the long term. These include increased resistance to infections, and enhanced mental and motor development and school achievement, which in turn may lead to better employment opportunities, income, and welfare in the long run.

To ensure that improvements in diet quality effectively translate into improvements in nutritional status, however, children have to consume these improved diets for a minimum

period of time (say, 3–6 months at least). At the time of the evaluation, the turnover of children in and out of the program was extremely high. In our sample, more than half of the beneficiary children had been in the program for less than 1 year, and one third had been in the program for less than 3 months. This is likely to be due to the high mobility of poor urban dwellers and the instability of maternal employment (mothers have to be working outside the home to be eligible for the program). These high turnover rates, however, are likely to limit the long-term nutritional benefits of the program, and efforts should be made to encourage parents of beneficiary children to remain in the program for as long as they can during their childs' preschool years. The program should also ensure that the high turnover rates are not due to problems of dissatisfaction with the program caretakers or with the quality of the services.

Another factor that may limit the potential impact of the program on poverty reduction is its very low coverage. In spite of being one of the least expensive childcare alternatives available in the study area, the program was used by only 3 percent of eligible households, that is, families with a child younger than 7 years whose mother worked outside the home. This low coverage appeared to be due largely to the program's limited supply, but a significant proportion of nonusers believed that they did not need the program because they had family members available to help with childcare. As is the case in most cultures, Guatemalan parents generally feel more comfortable having their children cared for by a close relative than by a private babysitter or in a daycare center. Cost is obviously an additional consideration, but our study showed that relatives often get paid for helping out with childcare, and food has to be provided. For some families, childcare provided by relatives was more costly than participating in the subsidized HCP. Close to half of the working women interviewed indicated that they would be interested in participating in the HCP if space was available for their children. Thus, expanding the program to cover a larger proportion of the population of working women could increase its overall impact on poverty reduction.

Strengths and Weaknesses of Our Evaluation

Our evaluation of the Guatemala HCP is, to our knowledge, the first evaluation of a government-sponsored community daycare program that assessed both design and implementation aspects, and evaluated the program's benefits on participating children. The design of the impact evaluation, however, has its limitations. Because the program was ongoing at the time of the study, it was not possible to use a randomized before/after design for the impact evaluation. Thus, it is not possible to assess whether children who are currently in the program are better off than they were before they entered the program. This is a common problem with evaluations that are planned after a program has been implemented for some time. One potential way to avoid this problem would have been to carry out the evaluation in areas where new *hogares* are being opened, but too few new *hogares* were opening during the year of the study. The next best approach to using a before/after quasi-experimental design for this type of evaluation is to select a group of subjects who can be used as a "control" (or "comparison") group. This control group is then used to compare the outcomes of interest (in this case, children's diets and nutrient intakes) between children participating in the program and these "control" children (who, by definition, do not participate in the program). The key to a good intervention/control comparison design is the selection of an appropriate control group. The suitability of the control group, in turn, is determined by how similar the group is to the intervention group, in all aspects except its participation in the program and in other factors that the program may actually affect (for example, women's income in this study).

We used two approaches to creating matched beneficiary and control samples to assess the robustness of our findings. The first was individual matching at the time of design and the second was matching at the time of analysis using PSM. Matching by design is an approach that allows pairing beneficiary and control individuals based on preselected matching criteria (see Chapter 7 for more information on matching). This method was one of the methods used in our study to select control children of the same age as the beneficiary children and who lived in the same neighborhood and whose mothers were working outside the home.

As expected, matching by design was effective in making the two groups (beneficiary/control) comparable with respect to the matching criteria, that is, children's age and maternal employment (all mothers from both groups were working outside the home). The groups, however, were not as comparable as could have been expected in terms of living conditions, in spite of the fact that children were individually matched based on neighborhood of residence. This is probably due to the fact that urban areas tend to be more heterogeneous than often believed and that socioeconomic conditions may vary significantly even within small geographic areas and communities (Morris 2001). In our study, mothers from the beneficiary and control groups differed in a number of other ways, including employment characteristics and household composition. Overall, compared to the control group, mothers of beneficiary children tended to have more limited resources and lived in more precarious conditions than mothers from the control group, and they were more likely to work in the formal sector and to have a salaried employment. Thus, because of the cross-sectional nature of our study, it is impossible to determine whether the beneficiary and control groups differed in their socioeconomic characteristics as a result of the program, or whether they were different to start with. If they were different to start with, it may mean that the program attracts a particular type of mother, and therefore that there is a self-selection bias (that is, that the characteristics of mothers who choose to enter the program are different from those who choose not to). Clearly the matching process does not address the potential problem of self-selection, and as noted previously, our initial attempt to use the random sample to control for self-selection bias aborted because of the small sample size of program participants in this sample. Thus, our study does not control for the potential problem of self-selection, and consequently the results should be interpreted with caution.

To test the sensitivity of our results to the type of matching methods, we also created a statistical comparison sample using PSM. While PSM does not control for selection bias due to differences in unobservables, we compared participants and controls at common values of (observable) matching variables—that is, we ensured that the probabilities of participation of beneficiaries and controls were sufficiently similar. Indeed, our results, using two types of PSM estimators, are remarkably consistent with those using controls chosen at the time of subject selection.

Our findings suggest a strong association between participation in the program and higher dietary quality among children, both at the place of care and at home. This association, however, should not be interpreted as a demonstration of causality—that is, that children's diets are of better quality *because* of their participation in the program. Both the quasi-experimental nature of our design (as opposed to a randomized, experimental before/after, beneficiary/control design) and the possible problems of self-selection prevent us from making a statement of causality regarding the association found between program participation and children's dietary quality. However, the finding that children participating in the program have better diets than those who are cared for in other settings suggests an important role for this type of program in the

poor urban slums of Guatemala City. Certainly, the children who are participating in the program come from even more resource-constrained households than the control group, and nevertheless, they enjoy better diets both at home and at their place of care. The potential long-term consequences of these dietary improvements on children's cognitive development and schooling performance are certainly worth consideration by other similar programs.

Comparison with Other Community Daycare Programs in the Latin American Region

Community daycare programs are popular in Latin America, probably because of the high rates of urbanization in the region and the significant participation of women in the labor force. From available information, it appears that programs in Peru, Colombia, Venezuela, Bolivia, and several Central American countries have similar objectives and design as the HCP, and offer the same basic package of services, that is, food, early child stimulation, care, and hygiene. As is the case for the HCP, most programs in the region also appear to be highly subsidized (Young 1995; CGECCD 1997; van der Gaag and Tan 1998). Governments provide for most of the initial inputs, including physical equipment and the training of caretakers, whereas financing of recurrent costs (for example, caretaker's salary and food) is usually split between the government and the parents.

Compared to these other programs, however, the Guatemala HCP stands out as the most intensive one relative to the amount of food provided in the *hogar,* with its two meals and two snacks per day. Most other programs provide only one meal and one or two snacks per day. The HCP, on average, contributed 70 percent of children's recommended energy intake (although the program's target is 80 percent) and more than 100 percent of recommended intakes for a number of micronutrients. Clearly, the HCP greatly emphasizes the importance of providing beneficiary children with high-quality, balanced diets, and is successful in doing so.

In spite of their popularity in the region, very few of the community daycare programs have been evaluated, and most of the evaluations available have focused on selected operational aspects or on the quality of service delivery (Young 1995; IDB 1997). Even these operational evaluations fail to examine the system as a whole and, therefore, are of limited usefulness. To our knowledge, none of the evaluations have combined a process and impact evaluation and used rigorous research methods like our study of the HCP in Guatemala. One evaluation of the Colombia program (*Hogares Comunitarios de Bienestar*) looked at its impact on children's cognitive development and socialization. Children who had been in the program for more than 1 year were found to have greater cognitive abilities and levels of socialization than children who had been in the program for a shorter duration (Young 1995).

Because of limited resources, our evaluation did not include an assessment of the program's impact on children's cognitive development and socialization. At the time of the evaluation, however, the educational component was weak, as demonstrated by our operational research, and thus may have had minimal impact on beneficiary children. The high turnover rates of children may also have limited the potential impact of the program on child developmental outcomes. It would be interesting, however, to assess whether the program's strengthening plan developed in 2000 was effective in improving the delivery and the quality of the psycho-pedagogical activities and if so, to assess its impact on children's cognitive development and school readiness. Clearly our personal observations through visits to the *hogares* suggest that children in the program are much less fearful of strangers, are more communicative with adults and other

children, and generally appear more socialized than children of the same age and neighborhoods who are cared for in a private house (theirs or that of a babysitter). It will be important in the future to try to document these apparent program effects more systematically and to look at their long-term impact on children's readiness and performance in school.

Lessons Learned for Urban Programming

Because of the unique characteristics of urban livelihoods (Ruel, Haddad, and Garrett 1999; Ruel and Garrett 2004), programming in urban areas offers a series of challenges. Our experience with the HCP offers insights regarding four key aspects of urban programming: diagnosis, targeting, program design, and partnerships. Lessons learned on these four issues are summarized below.

Diagnosis

The importance of performing careful assessments of urban livelihoods strategies and constraints prior to program design and implementation is well-recognized (Frankenberger, Garrett, and Downen 2000; WFP 2002). Given the complexity of urban livelihoods and their constantly changing nature, programs must be based on an in-depth understanding of the existing strategies used by the urban poor and their formal and informal safety nets.

The HCP in Guatemala was designed in the early 1990s as a response to the changing needs of the growing urban population: increasing poverty; rising numbers of women-headed households as a result of migration and widowhood resulting from the long civil war; increasing employment opportunities in the formal sector (mainly *maquilas* and other factories); and the resulting increasing need for subsidized childcare alternatives to assist poor working parents. The Guatemala HCP is thus a good example of a program that seems to owe at least part of its success to its solid grounding on the local reality. In environments where women are mostly involved in informal-sector employment, such as in many large African cities, childcare is often assumed by the mothers themselves because they have the flexibility to take their child to their place of work and to adapt their schedule. In many Latin American cities, including Guatemala City, however, the increasing number of employment opportunities for women in the formal sector makes the provision of childcare support imperative.

Targeting

Targeting in urban areas is also recognized as a key constraint to effective programming (Gardner 2000; WFP 2002). Geographic targeting is thought to be particularly inefficient in many urban contexts because of the large heterogeneity within the areas (Morris et al. 1999), and because pockets of poverty are often widely dispersed throughout large city boundaries. Mobility and lack of community cohesion and violence also complicate urban community-based targeting.

As described throughout this report, the Guatemala CDP has proved very effective in reaching its targeted population: poor urban working parents, and especially poor, single women working in the formal sector. Findings from our operations research shed some light on the key factors responsible for the successful targeting of this program. First, the program focused all its promotional efforts in the poorest and more informal communities of the city, with the exception of a few areas that were too unsafe for the program to operate. Second, although the program relies on the self-selection of families, it has a well-established control system under which every prospective beneficiary family is visited at home and evaluated according to a set of preestablished criteria, including socioeconomic characteristics. Families are rejected if they do not meet the eligibility criteria, but, according to program staff, very few families have had to be rejected because of high socioeconomic status. Thus, self-selection seems to be ef-

fective in screening out families that do not need this type of program.

Even more important for targeting is the fact that the HCP appears to be an effective mechanism to target food assistance programs to preschoolers in urban areas. This type of program is much less susceptible to leakage to nontargeted individuals than most types of food assistance programs because donated food is used on-site. Our evaluation has shown that beneficiary children do indeed consume the food provided in the daycare centers, and that their parents do not appear to underfeed them at home as a form of substitution.

Another advantage of the HCP model as a targeting mechanism for food assistance is the fact that, unlike most programs based on take-home rations, it does not require mothers to go to the health center or other delivery place during their working hours to receive the benefits. Most food assistance programs targeted to young children require monthly visits to the health center for preventive care, in addition to a monthly trip to the food distribution point, and sometimes a mandatory presence at an education session held in the community. These types of programs are beyond the reach of many poor urban women, especially those who work away from home for long hours, often 6–7 days a week like beneficiary parents in the HCP. Thus, the advantage of the HCP model is that it allows poor urban women to participate in a program that does not require their presence in the community during the daytime. Thus, the program is an effective approach to targeting food assistance and other program components to segments of the urban population who are otherwise typically excluded from most development programs.

Although we do not have information on the cost of targeting, the program is largely based on self-targeting once initial promotion is done. The real cost of targeting is the *screening* of families done by program staff once they send an expression of interest. Better use of the information collected through this screening visit, such as computerizing the information and using it as a type of baseline data, would increase its usefulness in the long run.

Program Design

Because urban livelihoods are so highly dependent on cash income, urban programs must reinforce the ability of the urban poor to seek and secure employment (Shaw, Crawshaw, and Fortier 1993; Gardner 2000). Hence, urban programming must be sensitive to the complementary needs of the urban poor, that is, employment and childcare assistance.

The HCP in Guatemala provides an excellent model of an urban program that effectively achieves both of these key goals. By providing secure, reliable, and affordable childcare, it allows working parents (and especially women) to engage in income-generating activities outside the home, five days a week. The program, however, does not operate on Saturdays, in spite of the fact that all factories in Guatemala and most offices are open on Saturdays at least until early afternoon. Our evaluation showed that some parents have to pay significant amounts of money for Saturday care (and sometimes Sunday as well), because the program does not offer weekend care. Parents use a variety of alternatives, including paying very high hourly fees to the program caretakers themselves to care for their children during weekend hours. Clearly, this is a mechanism that may benefit the caretakers, but it defeats one of the main purposes of the program, which is to provide *affordable* childcare support to parents.

The lesson learned from this is that programs should try to conform at least to the general schedule of work typical of the area where they operate, in order to truly assist their targeted beneficiaries. In the case of Guatemala, we do not imply that the program should offer services on Sundays for the few parents who would need it, but that it should at least be open until mid-day Saturday, when most formal-sector employees complete their week of work.

Partnerships

The HCP is involved in a successful partnership with WFP for its food assistance component. At the time of the evaluation, however, the program was lacking an official institutional link with the Ministry of Health. A concrete problem identified both by care providers and parents in focus group discussions is the fact that the program does not provide any health services to beneficiary children, be it preventive or curative. Sick children always cause a real dilemma because parents risk losing their job (especially *maquila* workers) if they miss more than one day of work per month. Taking the sick child to the daycare center seems to be the only solution, but it puts the other children at risk (in the case of infectious diseases), and care providers have neither medicines, medical training, nor the time to go to health centers. Thus, one recommendation made to the program administration following our operational evaluation was to establish a partnership with the Ministry of Health to provide both preventive services to beneficiary children, such as immunization, growth monitoring, and micronutrient supplementation, and a referral system (or on-site treatment) for sick children. Health services are essential for the program to fully reach its goal of improving children's nutrition, health, and overall development.

Conclusions

Reducing barriers to obtaining employment is crucial for helping lift urban women out of poverty. Across Latin America, the higher labor force participation of women is associated with higher household incomes, and one of the most severe obstacles limiting the employment options of poor women is finding reliable and affordable childcare. Our analysis in Guatemala City suggests that interventions such as the HCP, which have the mutually reinforcing objectives of ensuring the appropriate care of young children and allowing their mothers to engage in income-generation activities, have great potential for success and impact in urban areas. Subsidized childcare support does seem to be a win–win solution because it provides short-term benefits to mothers, through increased employment opportunities, and to children, through improved diets and possibly mental development and socialization. These benefits, in turn, can have long-lasting effects on improving poor children's school readiness and school achievement, thereby improving their employment opportunities and wealth in the future.

APPENDIX

List of Modules and Data Collected for Beneficiary/Control and Random Samples

	Types of information collected	
Module	**Beneficiary/control sample**	**Random sample**
Household roster	Composition of members (age, gender, relation to household head, civil status, occupation, years of schooling, resident status)	Same
Consumption/expenditure	Food and nonfood	Not collected
Index woman's employment/income	Occupation, types of employment (up to three), sector, hours worked, schedule, earnings, wages, benefits, hours and days worked	Same
Employment/income of other household members	Occupation, types of employment (up to three), sector, income	Not collected
Nonlabor income and productive assets	Nonlabor income (pension, insurance, benefits, and so forth); remittances received/sent (by/to whom, location, amount, frequency); household durables (ownership and value of assets); financial assets (cash, savings, loans to be repaid); debts (loans, interest rates, collateral used to secure loans)	Only household durables
Childcare arrangements	Weekdays (Monday through Friday) and weekend (Saturday and Sunday): types of care, location, hours of use, cost (up to three types of arrangements)	Weekdays only
Family history and social networks	Woman's family background (birth order, age at which left family, age married or in union, assets at marriage, migration history, own mother's characteristics); social networks (types of support from relatives, friends, others; participation in social groups, and so forth)	Same

(*continued*)

	Types of information collected	
Module	**Beneficiary/control sample**	**Random sample**
Child dietary intake	Direct weighing one weekday (10 hours, from 6 a.m. to 4 p.m.); night and morning recall (previous 24 hours); weekend diet (48-hour recall)	Not collected
Maternal and child anthropometry	Weight and height	Mothers and children < 7 years
Child morbidity	Two-week recall	Not collected
Housing conditions and hygiene	House ownership; quality of housing (construction material); availability of services (water, electricity, sanitation, garbage removal)	Same
Hygiene	Hygiene spot check: observations of hygiene inside the house and in compound; maternal and child cleanliness (nails, clothes, and so forth); absence of feces and garbage in the house/compound	Same
Community questionnaire	Health facilities, schools, daycare institutions, labor opportunities (factories, markets, and so forth), infrastructure, services (water, sewage, garbage removal, public transport), market prices	Same

Note: Shaded rows indicate differences in data collection between beneficiary/control sample and random sample.

References

ACC/SCN (United Nations Administrative Committee on Coordination/Sub-Committee on Nutrition) 2000. *Fourth report on the world nutrition situation.* Geneva: ACC/SCN, in collaboration with the International Food Policy Research Institute.

Adato, M., D. Coady, and M. T. Ruel. 2000. An operations evaluation of PROGRESA from the perspective of beneficiaries, promoters, school directors, and health staff. Washington, D.C.: International Food Policy Research Institute.

Allen, L. H. 1994. Nutritional influences in linear growth. *Journal of Clinical Nutrition* 48 (Supplement 1): S75–S89.

Allen, L. H., and N. Ahluwalia. 1997. *Improving iron status through diet. The application of knowledge concerning dietary iron bioavailability in human populations.* OMNI Opportunities for Micronutrients Interventions. Washington, D.C.: John Snow, Inc./OMNI Project.

Arends, M. 1992. Female labor force participation and earnings in Guatemala. In *Case studies on women's employment and pay in Latin America,* ed. G. Psacharopoulos and Z. Tzannatos. Washington, D.C.: World Bank.

Becker, S., and A. Ichino. 2002. Estimation of average treatment effects based on propensity scores. *The Stata Journal* 2 (4): 358–377.

Blumenfeld, S. N. 1985. *Operations research methods: A general approach in primary health care.* PRICOR Monograph Series: Methods Paper 1. Washington, D.C.: PRICOR.

CGECCD (Consultative Group on Early Childhood Care and Development). 1997. *Venezuela case study: Programa Hogares De Cuidado Diario: Plan De Extension Masiva: Family Day-care Homes Program: Massive Extension Plan.* Program and Project Profiles in Early Childhood Care and Development. <http://ecdgroup.harvard.net/cases/casvenez.html>.

Deutsch, R. 1998. *How early childhood interventions can reduce inequality: An overview of recent findings.* Working Paper No. 384. Washington, D.C.: Inter-American Development Bank.

ECLAC (Economic Commission for Latin America and the Caribbean). 1995. *Social panorama of Latin America.* Santiago: United Nations.

———. 1997. *Preliminary overview of the economy of Latin America and the Caribbean 1997.* Santiago: United Nations.

Frankenberger, T. R., J. L. Garrett, and J. Downen. 2000. Programming for urban food and nutrition security. In *Achieving urban food and nutrition security in the developing world,* ed. J. L. Garrett and M. T. Ruel. 2020 Vision Focus Briefs 3. Washington, D.C.: International Food Policy Research Institute.

Funkhouser, E. 1996. The urban informal sector in Central America: Household survey evidence. *World Development* 24 (11): 1737–1751.

Gardner, A. 2000. Urban food security: Concepts and issues for programming in the new millennium. TANGO International. Photocopy.

Gibson, R. S. 1990. *Principles of nutritional assessment.* New York and Oxford: Oxford University Press.

Habicht, J.-P., C. Yarbrough, and R. Martorell. 1979. Anthropometric field methods: Criteria for selection. In *Human nutrition—A comprehensive treatise,* vol. 2, *Nutrition and growth,* ed. D. B. Jelliffe and E. F. P. Jelliffe. New York: Plenum Press.

Hallman, K., A. R. Quisumbing, M. T. Ruel, and B. de la Briere. 2005. Mothers' work and child care: Evidence from the slums of Guatemala City. *Economic Development and Cultural Change* 53 (4): 855–886.

Heckman, J., H. Ichimura, and P. Todd. 1997. Matching as an econometric evaluation estimator: Evidence from evaluating a job training program. *Review of Economic Studies* 64 (4): 605–654.

Hermida, J., and J. Robles. 1992. Evaluación rápida y mejoramiento de calidad de las actividades de los servicios de salud, frente a la diarrea aguda y cólera: guías de trabajo. Guatemala City: Institute of Nutrition of Central America and Panama/Organizacion Panamericana de la Salud (OPS).

IDB (Inter-American Development Bank). 1996. *Country evaluations: Guatemala 1996.* Washington, D.C.

———. 1997. *Perfil II-Peru: Programa de Atencion al Menor de Tres Anos-Wawa Wasi.* Washington, D.C.

INE (Instituto Nacional de Estadística). 1997. *Encuesta nacional socio-demographica 1995.* Guatemala City.

———. 1999. *Encuesta Nacional de Salud Materno Infantil 1998–1999.* Guatemala City.

IOM (Institute of Medicine). 2000. *Dietary reference intakes. Applications in dietary assessment.* Food and Nutrition Board. Washington, D.C.: National Academy Press.

Jacoby, H. 2002. Is there an intrahousehold "flypaper effect": Evidence from a school feeding program. *Economic Journal* 112 (476): 196–221.

Kleinbaum, D. G., L. L. Kupper, and H. Morgenstern. 1982. *Epidemiologic research. Principles and quantitative methods.* Belmont, Calif., U.S.A.: Lifetime Learning Publications.

Leuven, E., and B. Sianesi. 2003. PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing. <http://ideas.repec.org/c/boc/bocode/s432001.html>. Version 1.2.3.

Lohman, T. G., A. F. Roche, and R. Martorell. 1988. *Anthropometric standardization reference manual.* Champaign, Ill., U.S.A.: Human Kinetic Books.

Londoño, J. L., and M. Székely. 1997. *Persistent poverty and excess inequality: Latin America, 1970–1995.* Working Paper 357. Washington, D.C.: Office of the Chief Economist, Inter-American Development Bank.

Lutter, C. K., J. O. Mora, J.-P. Habicht, K. M. Rasmussen, D. S. Robson, and M. G. Herrera. 1990. Age-specific responsiveness of weight and length to nutritional supplementation. *American Journal of Clinical Nutrition* 51 (3): 359–364.

Martorell, R., L. Kettel Khan, and D. G. Schroeder. 1994. Reversibility of stunting: Epidemiological findings in children from developing countries. *European Journal of Clinical Nutrition* 48 (Supplement 1): S45–S57.

Menchú, M. T., H. Mendez, M. A. Barrera, and L. Ortega. 1996. *Tabla de Composición de Alimentos de Centro América.* Guatemala City: Institute of Nutrition of Central America and Panama/Pan America Health Organization.

Morris, S. S. 2001. Targeting urban malnutrition: A multicity analysis of the special distribution of child nutritional status. *Food Policy* 26 (1): 49–64.

Morris, S. S., C. E. Levin, M. Armar-Klemesu, D. Maxwell, and M. T. Ruel. 1999. Does geographic targeting of nutrition interventions make sense in cities? Evidence from Abidjan and Accra. *World Development* 27 (11): 2011–2019.

Population Health and Nutrition Information Project. 2000. *The status of children and adolescents in the Americas. A regional perspective. End of the decade report 1990–2000.* Washington, D.C.

Psacharopoulos, G., S. Morley, A. Fiszbein, H. Lee, and B. Wood. 1993. *Poverty and income distribution in Latin America: The story of the 1980's.* Human Resources Division Report 27. Washington, D.C.: World Bank.

Ravallion, M., and J. Jalan. 1999. Income gains to the poor from workfare: Estimates for Argentina's Trabajar Program. Policy Research Working Paper Series 2149. Washington, D.C.: World Bank.

Rivera, J. A., and J.-P. Habicht. 1996. Recovery of children with mild to moderate wasting: factors enhancing the impact of supplementary feeding. *American Journal of Public Health* 86 (10): 1430–1434.

Rivera, J. A., M. T. Ruel, M. C. Santizo, B. Lönnerdal, and K. H. Brown. 1998. Zinc supplementation improves the growth of stunted rural Guatemala infants. *Journal of Nutrition* 128 (3): 556–562.

Robles, J., Y. Alfaro, R. Flores, and J. Hermida. 1995. El mejoramiento de la calidad de las actividades de control de enfermedades diarréicas, incluyendo el cólera. Guatemala City: Institute of Nutrition of Central America and Panama/Organizacion Panamericana de la Salud.

Rosenbaum, P. R., and D. B. Rubin. 1983. The central role of the propensity score in observational studies for causal effects. *Biometrika* 70: 41–55.

Rothman, K. J. 1986. *Modern epidemiology.* Boston/Toronto: Little, Brown.

Ruel, M. T. 2000. Urbanization in Latin America: Constraints and opportunities for child feeding and care. *Food and Nutrition Bulletin* 21 (1): 12–24.

———. 2003. *The Guatemala Community Day Care Program: Effective food aid targeting in urban areas.* Linking Research and Action: Strengthening Food Assistance and Food Policy Research brief. Washington, D.C., and Rome: International Food Policy Research Institute and the World Food Programme.

Ruel, M. T., and Garrett, J. 2004. Features of urban food and nutrition security and considerations for successful urban programming. *Electronic Journal of Agricultural and Development Economics* 1 (2): 242–271.

Ruel, M. T., F. Arévalo, and R. Martorell. 1996. *El uso de la investigación operacional para la evaluación de aspectos funcionales de programas de alimentación complementaria. Estudio de caso: CARE Guatemala.* Guatemala City: Instituto de Nutrición de Centro América y Panamá (INCAP)/ Organizacion Panamericana de la Salud (OPS).

Ruel, M. T., L. Haddad, and J. Garrett. 1999. Some urban facts of life: Implications for research and policy. *World Development* 27 (11): 1917–1938.

Ruel, M. T., J. A. Rivera, K. H. Brown, and B. Lonnerdal. 1997. Impact of zinc supplementation on morbidity from diarrhea and respiratory infections among rural Guatemalan children. *Pediatrics* 99 (6): 808–813.

Schroeder, D. G., R. Martorell, J. A. Rivera, M. T. Ruel, and J.-P. Habicht. 1995. Age differences in the impact of nutritional supplementation on growth. *Journal of Nutrition* 125 (4S): 1051S–1059S.

Sedlacek, G., L. Gutierrez, and A. Mohindra. 1993. *Women in the labor market.* Washington, D.C.: Education and Social Policy Department, World Bank.

Shaw, J., B. Crawshaw, and F. Fortier. 1993. *Using project food aid to help alleviate urban poverty. Experience and issues.* Rome: World Food Programme.

Sommer, A., and K. P. West. 1996. *Vitamin A deficiency. Health, survival, and vision.* New York and Oxford: Oxford University Press.

Torún, B., M. T. Menchú, and L. G. Elías. 1994. *Recomendaciones Dietéticas Diarias del INCAP.* Publicación INCAP ME/057. Guatemala City: Institute of Nutrition of Central America and Panama/ Pan America Health Organization.

UNCHS (United Nations Center for Human Settlements). 1996. *An urbanizing world: Global report on human settlements, 1996.* Oxford: Oxford University Press.

Van der Gaag, J., and J.-P. Tan. 1998. The benefits of early child development programs: An economic analysis. Draft. Washington, D.C.: World Bank.

WFP (World Food Programme). 2002. *Urban food insecurity: Strategies for WFP. Food assistance to urban areas.* Policy Issues. Agenda Item 5. WFP/EB.A/2002/5-B. Rome.

World Bank. 1998. *Guatemala country assistance strategy.* Washington, D.C.

———. 2001. *LAC gender database.* Washington, D.C.

———. 2003. *Guatemala. Poverty in Guatemala.* Washington, D.C.

Young, M. E. 1995. *Early child development: Investing in the future.* Washington, D.C.: World Bank.