The precarious livelihood in waste dumps: A report on food insecurity and hunger among recyclable waste collectors

A precária subsistência nos lixões: um relato sobre insegurança alimentar e fome entre catadores de materiais recicláveis

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ABSTRACT

Objective

This study estimated the prevalence of food insecurity, social vulnerability factors, and health risks in recyclable material collectors who work at the dump.

Methods

A census was performed of the collectors' families living on five blocks near the dump of the Complementary Industry and Supply Sector, *Brasília*, Federal District, known as *Cidade Estrutural*. Sociodemographic data about sanitation, social programs, housing, labor, and food security were collected during home interviews.

Results

A total of 204 households composed of 835 residents and 286 collectors was studied. Ninety-three percent of the households had piped water, 65% had sanitation and almost all had electricity. But the presence of rats and cockroaches occurred in 90% of the households. A third of the workers reported being sick, but 44% of the families were not visited by community health workers because not all blocks were covered. Based on the food insecurity scale and the reporting of eating foods picked from the garbage by 55% of the respondents, a total of 75% of the households were exposed to food insecurity. According to the criteria of the *Bolsa Família*

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Program, 52% of the households were eligible, but not all were enrolled: the undercoverage was 44%. The need of other inclusion criteria for social programs, in addition to income, to identify populations surviving precariously in extreme poverty, hunger, and demeaning work is discussed.

Conclusion

The social and environmental vulnerability of this population, subject to hunger and disease, is serious. The *Brasil sem Miséria* (Brazil without Poverty) program will not be capable of eliminating poverty while these subhuman conditions remain unresolved.

Indexing terms: Environmental health. Food security. Government programs. Occupational health. Solid waste disposal. Recyclable material collectors.

RESUMO

Objetivo

Estimar a prevalência de insegurança alimentar e de fatores de vulnerabilidade social e de risco à saúde em catadores de materiais recicláveis que trabalham no lixão.

Métodos

Foi realizado um censo das famílias de catadores residentes em Brasília, Distrito Federal, em cinco quadras próximas ao lixão do Setor Complementar de Indústria e Abastecimento, localidade conhecida como Cidade Estrutural. Durante visita domiciliar, coletaram-se dados sociodemográficos sobre saneamento, programas sociais, condições de moradia, de trabalho e de segurança alimentar.

Resultados

Foram estudados 204 domicílios, nos quais havia 835 moradores, sendo 286 catadores. Em 93% dos domicílios, havia acesso à água encanada, 65% tinham esgotamento sanitário e quase todos tinham energia elétrica. A presença de ratos e baratas, entretanto, ocorria em 90% dos domicílios. Quase um terço dos trabalhadores relatou estar doente, mas 44% das famílias não eram visitadas por agentes comunitários de saúde, pois não há cobertura em todas as quadras. Com base na escala de insegurança alimentar e no relato de ingestão de alimentos catados no lixo por 55% dos entrevistados, totalizaram-se 75% das famílias expostas à insegurança alimentar. Pelo critério do Programa Bolsa Família, 52% das famílias eram elegíveis, mas nem todas recebiam o benefício: a subcobertura foi de 44%. Discute-se a necessidade de outros critérios de inclusão em programas sociais, além da renda, visando identificar populações que sobrevivem precariamente em situação de miséria, fome e trabalho indigno.

Conclusão

É grave a vulnerabilidade socioambiental dessa população, que está sujeita à fome e a doenças. O Programa "Brasil sem Miséria" não alcançará a eliminação da pobreza enquanto não equacionar essas condições sub-humanas.

Termos de indexação: *Saúde ambiental. Segurança alimentar e nutricional. Programas governamentais. Saúde do Trabalhador. Acondicionamento de resíduos sólidos. Catadores.*

INTRODUCTION

The current development model of our society may promote many of the social problems faced by mankind today. The emergence of capitalism, especially the Industrial Revolution, induced changes in social relations by establishing a complex production system based on economy and profit. The unlimited growth of production and productive forces, incentivized by the notion of 'development', led people to see environmental elements as raw materials for production, as resources that could be forever exploited to meet the market's demand[1,2].

In Brazil, some of the consequences of the current development model are the growing intraregional and intraurban differences, which reflect the marked inequalities between the rich and the poor[3]. For Prata[4], the concept of inequality refers to the relationship between development

and social justice and, therefore, relates to the inequity in the distribution of income, education, housing, and services (health services, piped water supply, and sanitation), in the access to jobs, consumer goods and land, and in decision making and social influence. According to Szwarcwald *et al.*[5], a theme widely discussed in the scientific literature, is how health differentials reflect the social inequalities of a population, manifesting as different morbidity and mortality profiles and early illness in less privileged social groups. Studies cited by the same authors show that societies with better income distribution also have better health conditions.

Some authors believe that one of the most important characteristics of social inequality is urban or environmental segregation, where the most deprived population does not have proper access to primary services and basic urban infrastructure, and has to deal with poor sanitation, inexistent sewerage, difficult access to supplies and health services, in addition to fewer job and vocational opportunities, among others[6].

The impacts on the environment caused not only by urbanization but also by the pollution generated by the absence of environmental sanitation may increase the proliferation and distribution of animal vectors of infectious agents. The above mentioned socioeconomic model is strongly associated with the current sanitation problems, where the most vulnerable population is exactly the one who is most excluded from the benefits of development[7].

Hence, according to Rigotto[8], the profound gap between human beings and the environment originates from the current system, where the absence of individual and collective responsibility for the consequences of this unbridled production is what leads to the environmental and social conditions seen around the planet. Therefore, there is a noteworthy tight bond between economic development, environmental conditions and health conditions.

Increased production resulting in greater amounts and varieties of goods is a positive indicator of development. However, it does not take into account the effects of the waste generated by the production processes, the fate of the waste and packaging, and the product's life cycle. In order to exemplify this situation in Brazil, the National Basic Sanitation Survey from the *Instituto Brasileiro de Geografia e Estatistica* (IBGE, Brazilian Institute of Geography and Statistics)[9] found that the daily production of solid wastes by households and public entities had increased from 140,080.70 tons to 188,814.90 tons between 2000 and 2008. Of this amount, 19.8% were still sent to dumps, 58.3% were sent to sanitary landfills and 19.4% were sent to controlled landfills. According to the same survey, most municipalities (50.8%) were still using open dumps for their solid wastes, 22.5% sent their garbage to controlled dumps, and only 27.7% were using the correct sanitary landfills.

In Brazil, the *Classificação Brasileira de Ocupações* (CBO, Brazilian Occupation Classification) recognized the profession of "recyclable material collector" and made it official in 2002. However, this acknowledgement does not seem to have improved the life and work conditions of recyclable material collectors and their families. According to Siqueira & Morais[10], the solid residues in dumps may even provide a small income to recyclable material collectors, but the dumps also promote diseases and worsen the life conditions of this population. Other studies have pointed out the poor life and work conditions of this group of people[11,12]. A study done in *Porto Alegre* (RS) found that 61% of the local recyclable material collectors noticed the negative impact that pollution had on their health[11]. In the same sense, medical leaves were common among garbage collectors in *Governador Valadares* (MG), impairing collectors' ability to work[1].

Regarding the perception of occupational danger by collectors from *Fortaleza* (CE), all interviewees stated that their work was hazardous to health, difficult, toiling, with health risks and hazards, but that they continued working despite

these challenges and experienced discomfort, malaise and body pains, sometimes even minimizing the problems[12]. According to Almeida *et al.*[13], this would be associated with a lack of work options, becoming an alternative income source and allowing the survival of many individuals who, having been excluded from society, depend on collecting recyclable materials from the solid wastes. Moreover, daily exposure to this type of pollution leads people to accept the associated risks as "natural"[11]. Marked by unemployment and by having become unemployable, recyclable material collectors survive in minimal health, housing and dietary conditions[14] probably experiencing food insecurity. The concept of Food and Nutrition Security emerged during World War I and has stood out in global political actions as an evolving process, subject to influences from the political, economic and social spheres. Since prehistory, access to food is a paramount factor for human beings, who, at a subsistence level, subjected themselves to the natural supply. However, once man began producing or even administrating his own food, the significant demographic and economic growth culminated in the necessary large-scale food production and its insertion in the industrial process[15-17].

Food production is a factor of vital significance for the development and maintenance of a society, and the control over such production could be the object of domination of one nation over another. In this context, during World War I (1914-1918), the term food security emerges, defined as the food self-sufficiency of each country which aimed to avoid vulnerability to external political and military embargos[18]. During World War II (1939-1945), the noteworthy devastation that occurred in many countries and their consequent inability to produce sufficient food made the concept of food security reemerge, especially to promote access to food. This fact culminated with the creation of the United Nations (UN) in 1945 and its specialized branches, such as the Food and Agriculture Organization (FAO)[17,19]. During a conference held in 1953, FAO created food assistance, where food-secure nations would help those with food insecurity. In this context, the concept of food security gained three basic aspects: quantity, quality and regularity with respect to food access[18].

The first "Conference on Global Food Security" was held in 1974, during a time when the global food reserves were low. The conference established a close link between food security and agricultural production. The discourse of the chemical industry stood out, since they claimed that hunger would disappear with the growth of agricultural production, which in turn would require unbridled use of chemical substances and improved genetics, increasing food production[17,19]. Although global food production has recovered, malnutrition and hunger still persist, as social segregation is catalyzed by the capitalist system which, in the 1980s, came up with the notion that such social evils did not stem exclusively from a country's food sovereignty, but also from the demand of and distribution to all inhabitants of the nation, from the richest to the poorest[17].

In the 1980s, Amartya Sen refuted the concepts that linked hunger exclusively to food availability and emphasized the problem of access to food and its connections with political, social, and economic processes. The acknowledgment that situations of food insecurity may happen in the context of food availability encouraged the emergence of new approaches to food security[19].

Right after the World Food Summit in 1996, the Committee on Economic, Social and Cultural Rights of the United Nations' High Commissioner for Human Rights issued the General Comment 12, which establishes the human right to food, forcing all member states to ensure this right[18,20].

In Brazil, food and nutrition security gains social strength and reaches the streets during the 1990s, with the movement *Ação da Cidadania contra a Fome, a Miséria, e pela Vida* (Citizens' Action against Hunger and Poverty and for Life),

led by the sociologist Herbert de Souza[18]. One of its objectives was to mobilize all segments of the Brazilian society to seek solutions for hunger and poverty issues. The Citizens' Action encouraged citizens to participate in the construction and improvement of social policies.

In 2003, the fight against food insecurity and hunger shifted from a social demand to a government priority and, in subsequent years, to a state policy, as described below. In May 2003, the *Ministério Extraordinário de Segurança Alimentar* (MESA - Extraordinary Ministry for Food Security and Fight against Hunger) was created with the mission of "formulating and coordinating the implementation of the National Food and Nutrition Security Policy, whose objective is to guarantee the human right to food in the national territory"[21] (p.03).

In 2004, one year after the reimplementation of the *Conselho Nacional de Segurança Alimentar e Nutricional* (CONSEA, National Council for Food and Nutrition Security), the "II National Conference for Food and Nutrition Security" chose to include food sovereignty in the food and nutrition security concept, mentioning the right of every nation to make decisions that promote food and nutrition security, preserving the dietary culture and vocations of its peoples[22].

The institutionalization of food and nutrition security in Brazil gains new strength with the Law nº 11.346, issued on September 15, 2006, creating the *Sistema Nacional de Segurança Alimentar e Nutricional* (SISAN, National System of Food and Nutrition Security), that aims to ensure the human right to appropriate food"[19,23]. SISAN consists of: (1) National Conference on Food and Nutrition Security, responsible for food and nutrition security guidelines and priorities; (2) CONSEA, an divisory council for country's president; and (3) *Câmara Interministerial de Segurança Alimentar e Nutricional* (CAISAN, Interministerial Chamber for Food and Nutrition Security), consisting of 19 ministers of state and special secretaries. Article 3 of the said law defines food and nutrition security as:

> Fruition of everyone's right to regular and permanent access to quality foods in adequate amounts, without compromising one's access to other basic needs, and based on food practices that promote health, respect cultural diversity, and are environmentally, culturally, economically, and socially sustainable (p.01).

This definition takes into account the issue of environmental, cultural, economic and social sustainability, a concept which had already been fully validated by the Eco 92 UN Conference on Environment and Development (UNCED)[24].

Food and nutrition security and the human right to appropriate food became state policy in 2010. Article 6 of the Brazilian Constitution did nothing more than imply the right to food, but this problem was resolved by the Constitutional Amendment nº 64, which included the concept clearly, making food one of the basic rights of the Brazilian people[25].

Two surveys called *Pesquisa Nacional por Amostra de Domicílios* (PNAD, National Household Sample Surveys)[26] done in 2004 and 2009 assessed Food Insecurity (FI) in Brazil using the *Escala Brasileira de Insegurança Alimentar* (EBIA, Brazilian Food Insecurity Scale) consisting of 14 questions[27]. In 2004, 34.9% of the Brazilian households experienced some kind of FI and 7.0% experienced severe FI. In 2009 the prevalence was lower: 30.2% for FI and 5.0% for severe FI, meaning that 65.6 million Brazilians experienced some food restriction or concern about not being able to buy sufficient food.

The National Household Sample Survey 2009 showed that FI in *Brasília* (DF) was even lower than the national average: 24.9% for any kind of FI and 4.6% for severe FI[26]. However, a previous study concluded that Brazil displays wide inter- and intraregional variations in the occurrence of severe FI[28], thus showing the need to determine the prevalence of FI at the local level. *Brasília* (DF) has a dump just a few kilometers away from the *Palácio do Planalto*, the Brazilian presidential palace. Given the health risks

associated with recyclable material collectors' work at this dump, the present study aimed to investigate the perception of health risks and the prevalence of food insecurity in this population.

METHODS

The study was performed at *Cidade Estrutural*, located in *Brasília* (DF), 13km away from the nation's administrative center. The occupation of *Cidade Estrutural* began with the construction of shacks made by recyclable material collectors working at Brasilia's dump in the early 1970s. The *Pesquisa Distrital por Amostra de Domicílios* (PDAD, District-Level Household Sample Survey) of 2010/2011 estimated the urban population of this administrative region to be 25,732 inhabitants[29].

This study performed a census of recyclable material collectors' families living in five blocks of *Cidade Estrutural*, located at a distance of no more than 100 to 200 meters away from the dump. The survey used a previously tested questionnaire created for this purpose and administered by students of the Public Health Management and Nutrition undergraduate courses of *Universidade de Brasília* (UnB) accompanied by their professors. The questionnaire included questions that covered sociodemographic conditions, basic sanitation, enrollment in the government's social programs, and living and working conditions, among others, and was filled out by the interviewer according to the information provided by the household head.

Food security was assessed by a short scale already in use in Brazil consisting of six questions[30]. According to the method, the respondent has to be either the family head or the person in charge of buying foods for the family. The questionnaire also included a question about the consumption of foods retrieved from the garbage. This fact alone already indicates the violation of their rights, since the Law nº 11.346/2006 defines food security as access to "quality foods" by "socially sustainable" means[23] (p.1).

Data were collected in November 2011, on Sundays, since this is the only day the dump is closed and the recyclable material collectors are likely to be at home. Fifteen teams closely supervised by four UnB university professors, each team consisting of two students and a community health agent, were responsible for the field work.

The project was approved by the Research Ethics Committee of UnB's School of Health Sciences under protocol number 151/2011. A free and informed consent form was read to the study population who then signed it. Nobody refused to participate in the study.

The software Epi Info™ version 7 was used for data analysis. Univariate analysis was used for expressing the frequency of the variables of interest and bivariate analysis for crossing the variables, when appropriate.

RESULTS

The study included 204 households of recyclable material collectors, totaling 835 dwellers. Of these, 286 worked as recyclable material collectors. Table 1 shows the household characteristics. There was a greater percentage of households with 3 to 4 rooms (mean=3.8) and 3 to 4 dwellers (mean=4.6; minimum of 1 and maximum of 20 dwellers). Most households were serviced by piped water, almost half the families reported filtration of their drinking water and 41% reported not treating the water in any way. Roughly 65% of the households were connected to the sewerage system and nearly all of them had electricity. Ninety percent of the dwellers reported the presence of rats and cockroaches in their homes.

Table 2 describes the socioeconomic characteristics of the study families and recyclable material collectors. Approximately 80% of the family heads were migrants, born in other states. At the time of the study, 99 families, almost 52%, were eligible for the Brazilian conditional cash transfer *Bolsa Família Program* (BFP). When the

Table 1. Household characteristics of recyclable material collectors, *Brasília* (DF), Brazil, 2011.

Characteristic	n	%
Number of rooms in the household		
1 to 2 rooms	53	26.1
3 to 4 rooms	87	42.9
5 to 6 rooms	49	24.1
7 or more rooms	14	6.9
Number of people in the household		
1 to 2 people	29	14.2
3 to 4 people	87	42.6
5 to 6 people	51	25.1
7 or more people	37	18.1
Household serviced by piped water		
No	14	6.9
Yes	190	93.1
Treatment given to the drinking water		
No treatment	83	41.3
Filtration	96	47.8
Other treatments	22	10.9
Household connected to the sewerage system		
No	72	35.3
Yes	132	64.7
Electricity in the household		
No	4	2.0
Yes	200	98.0
Presence of rats and cockroaches		
No	20	10.0
Yes	181	90.0

per capita family income was crossed with the BFP enrollment criteria, the undercoverage was expressive: among the 99 eligible families, 44 did not receive the benefit (44%). On the other hand, cash transfer was provided to 35 of the 92 families whose reported income exceeded the eligibility criterion, corresponding to 38% of incorrect targeting. Nineteen cases of child labor at the dump were registered in the study population, the youngest being 10 years old. About 40% of the recyclable material collectors had four years of schooling or less.

Table 3 shows the prevalence of some diseases and access to health services. Not all study blocks were covered by community health agents, which corroborates the study finding: 66% of the study households are visited by community health agents. Almost one-third of the workers reported being sick and roughly 20% had had diarrhea recently. The percentage of workers who reported having had an occupational injury was also high (55%). Access to medical care is reported to be easier than to dental care.

Table 4 shows the food insecurity status of the study population, where 50.0% of the families were classified as food secure based on their replies to the scale questions. However, 55.0% of the study families informed that they eat foods found in the dump. Crossing this information (food insecurity scale versus families that consume foods found in the dump) shows that the percentage of families who are indeed food secure drops to 24.5%, and that 148 families, corresponding to 75.5%, are exposed to food insecurity.

DISCUSSION

According to the *Companhia de Planejamento do Distrito Federal* (CODEPLAN, District Federal Planning Company)[31], the mean gross monthly income in *Distrito Federal* in 2010 was about 9 Minimum Salaries (MS). The greatest mean incomes were among those living in rich neighborhoods such as *Lago Sul* (43.4 MS), *Lago Norte* (34.3 MS), *Sudoeste*/Octogonal (24.1 MS) and *Brasília* (DF) (19.3 MS). The lowest mean incomes were found in *Itapoã* (DF) (1.6 MS), *Cidade Estrutural* (1.9 MS), and *Varjão* (DF) (2.8 MS), which is in agreement with the study findings. This discrepancy between the incomes of families living in geographically very close regions reflects the persistent social inequalities found in *Brasília* (DF), the country´s capital city.

Urban and environmental segregation is one of the most important characteristics of social inequality since this leads to the most vulnerable population having poor access to primary services and basic urban infrastructure, resulting in poor sanitation, inexistent sewerage and difficult access to health services, among others[6].

Table 2. Social and economic characteristics of the recyclable material collectors and their families, *Brasília* (DF), Brazil, 2011.

Characteristic	n	%
Head of family state of birth		
Distrito Federal	39	19.1
Bahia	37	18.1
Minas Gerais	31	15.2
Goiás	30	14.7
Maranhão	30	14.7
Other	37	18.2
Family income (in MS)		
Up to R$272 (½ MS)	11	5.6
From R$273 to R$544 (1 MS)	67	34.2
From R$545 to R$1,090 (2 MS)	95	48.5
Greater than R$1,090 (2 MS)	23	11.7
Family monthly expenditure with food (in MS)		
Up to R$272 (½ MS)	77	40.5
From R$273 to R$544 (1 MS)	83	43.7
From R$545 to R$1,090 (2 MS)	29	15.3
Greater than R$1,090 (2 MS)	1	0.5
Family per capita income according to the Bolsa Família cutoff points		
Less than R$70 (eligible and prioritized)	16	8.4
From R$70 to R$140 (eligible)	83	43.4
Greater than R$140 (ineligible)	92	48.2
Access to the Bolsa Família Program		
Benefited	90	47.1
Not benefited	101	52.9
Coverage of the Bolsa Família Program		
Eligible and/or prioritized and benefited (correct)	55	55.6
Eligible and/or prioritized, not benefited (undercoverage)	44	44.4
Targeting of the Bolsa Família Program		
Not eligible, but benefitted (bad targeting)	35	38.0
Not eligible and not benefited (correct)	57	62.0
Family member frequents popular restaurants		
Once a week (at least)	97	48.3
Never	104	51.7
Collector gender		
Male	157	54.9
Female	129	45.1
Collector age group		
Children and adolescents (10 to 17 years)	19	7.1
Adults (18 to 59 years)	241	90.7
Elderly (60 years or more)	6	2.2
Collector education level		
Never attended school	12	4.7
Attended grades 1 to 4	90	35.4
Attended grades 5 to 8	112	44.1
Has high school degree or more	40	15.8

Note: MS: Minimum Salaries.

Table 3. Perception about disease conditions and access to health services by recyclable material collectors. *Brasília* (DF), Brazil, 2011.

Characteristic	n	%
Visited by community health agents		
No	69	33.8
Yes	135	66.2
Reported some disease at the time of the interview		
No	137	67.8
Yes	65	32.2
Reported having had diarrhea in the last three months		
No	153	78.5
Yes	42	21.5
Had already experienced an occupational injury		
No	89	44.5
Yes	111	55.5
Received medical attention when needed		
No	102	51.5
Yes	96	48.5
Received dental care when needed		
No	157	78.9
Yes	42	21.1

Table 4. Classification of food security of the recyclable material collectors' families, *Brasília* (DF), Brazil, 2011.

Characteristic	n	%
Food security scale		
Food security	98	50.0
Food insecurity but no hunger	50	25.5
Food insecurity and hunger	48	24.5
Has eaten food retrieved from the garbage		
No	88	44.9
Yes (food insecurity)	108	55.1
Total number of families with food insecurity		
Food security	48	24.5
Food insecurity (according to the scale)	98	50.0
Insecurity (eating food from the dump)	50	25.5

Hence, although a considerable portion of the households are serviced by piped water (93.1%) and connected to the sewerage system (64.7%), the hygienic and sanitary conditions of these five study blocks are still far from ideal, considering their proximity to the dump. The solid wastes that are disposed on the soil and exposed to the weather, as seen in open dumps, cause serious problems both to the environment and to public health. Most of the solid wastes produced in Brazil consist of organic matter[32], which simultaneously offer food, shelter and possibility of reproduction to many organisms, such as bacteria, fungi and worms, which use the residues during their entire life cycle.

Infrastructure problems associated with the environmental impacts caused by urbanization and worsened by the inappropriate disposal of solid wastes in *Cidade Estrutural* affect the propagation of animal vectors of infectious agents, thereby jeopardizing the health of the local population[7]. The reported presence of rats and cockroaches in 90% of the households is an example of the situation described by the abovementioned study.

The present study evidences that the recognition of the profession of "recyclable material collector" in 2002 did not actually improve their labor conditions and quality of life. Nineteen cases of children working at the dump were registered in this study but this number is likely to be underreported. The law in Brazil clearly bans child labor in unhealthy and dangerous workplaces.

Although almost 16.0% of the collectors had high school education and 60.0% of the families had an income above two minimum salaries, 75.0% of them experience food insecurity. Over 24.0% of the collector´s families were exposed to "food insecurity with hunger," a proportion much higher than the 4.6% experiencing severe food insecurity found by the 2009 national survey in *Brasília* (DF)[26]. This study employed the short version of the food insecurity scale and, therefore, direct comparison with the 2009 national data should be done with caution.

However, the situation of the study population is aggravated by the fact that half the families consume foods picked from the garbage, indicating that more than 75% of them experience food insecurity. The families' willingness to eat foods retrieved from the dump

as a survival strategy is worthy of attention. Half the interviewees denied any food restriction in the short food insecurity scale, even though they were consuming foods from the garbage. So, when assessed only by this instrument, they would be classified as food secure. They were probably unaware that their rights were being severely violated. This result indicates that the instruments validated for food insecurity assessment in Brazil, that is, both the short scale[30] and the complete EBIA[26,27], need an adaptation before they are administered to recyclable material collectors, by including a question about eating foods found at the dump.

Analysis of the conditional cash transfer program (*Bolsa Família Program* - BFP) coverage and targeting showed that both were flawed. However, when analyzing targeting errors of this type of social policy, one must consider the extremely high income volatility of this population. In the present study, families reported higher, possibly transient incomes, but when they filled out the *Cadastro Único* (Single Registry) and were enrolled in the BFP, they were probably categorized, correctly, as eligible. This situation brings to light two reflections: one related to the life and labor situation of people having this kind of occupation, and the other, the need of launching a discussion about making the inclusion criteria for social programs, such as *Bolsa Família*, more flexible in situations of severe food insecurity, such as those found in this study. The quantitative criterion based exclusively on family *per capita* income does not take into consideration complex situations, such as those found by the present study. Thus, qualitative dimensions of the universe of social relations need to be assessed together with income indicators to identify vulnerable populations living in subhuman conditions and experiencing severe poverty, hunger, and demeaning work.

These reflections stem from the discussion about fairness as a principle of the social justice policies that try to "provide more to those who need it the most", thereby reducing the existing inequalities. Food insecurity along with hunger and the consumption of food found at the dump is a consequence of low income, lack of occupational and income stability, and the exploitation of garbage pickers by the recycling industry, which buys the material they select. Therefore, it is important to make the BFP more flexible and to combine it with public policies that provide decent jobs.

However, instead of desolation, the Portuguese sociologist Boaventura de Sousa Santos saw some light at the end of the tunnel, witnessing the social mobilization of collectors when he participated as a lecturer in the "6th Garbage and Citizenship Festival in Brazil"[33].

> I have learned that many of the most demanding fights for social inclusion require autonomous organization and mobilization means, since the agenda of political parties do not contemplate the aspirations of the most excluded individuals and the labor unions do not recognize occupations outside of the industrial capitalism model. The national recyclable material collector movement [in Brazil] aggregates hundreds of organizations and cooperatives with approximately 300,000 collectors. Through organization and mobilization, they gave new meaning to their self-esteem and identity, going from "destitute garbage eaters" to having a trade recognized by the Brazilian Code of Occupations denominated "recyclable material collector". Thus, these are recyclers who recycled their own lives. Not even the environmental movements in countries with thousands of [volunteer] garbage selectors realized the presence of these natural allies who, unlike them, certainly do not belong to the middle class, much less make discourses using beautiful words to hide the world's dirt"[33].

CONCLUSION

This work identified the health risks stemming from poor environmental sanitation

and contaminated foods that affect the population of recyclable material collectors from Cidade Estrutural's dump. In conclusion, this population is in a severe situation of socio-environmental vulnerability, living in inadequate hygienic and sanitary conditions and being subject to hunger and disease. It is imperative to ameliorate public actions that aim to improve the quality of life of this population to reduce the appalling conditions in which they barely survive.

The "Brazil without Poverty" program will not be capable of eliminating poverty while the dump issue is not solved and the work of collectors in these environments in subhuman conditions is not completely eliminated from the Brazilian society.

CONTRIBUTORS

LMP SANTOS, FC CARNEIRO, G HOEFEL and W SANTOS designed the study, and supervised and collected field data. LMP SANTOS and W SANTOS created and analyzed the database. TQ NOGUEIRA and W SANTOS searched the literature. TQ NOGUEIRA wrote the first draft, which was reviewed and approved by all authors.

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