

Work and Health: A Study on Recyclable Material Collectors in Poços de Caldas, MG

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Introduction

The problems related to solid residues have been growing in contemporary society, implying the deterioration of the quality of life, particularly in large urban centers.

The Urban Solid Residues (USR) or Household Residues (HR), generated by several activities in modern society, may result in several risks to public health, an equation that presents many interfaces: social, economic, political and administrative interfaces (WALDMAN, 2014a, 2014b, 2011a, 2011b and 2010; SIQUEIRA *et* MORAES, 2009, MUCELIN *et* BELLINI, 2008).

The degradation of the environment cannot be disconnected from a context including physical health problems, psychological disorders and socioeconomic asymmetries. Thus, pathologies such as infectious, degenerative and cardiovascular diseases, anxiety attacks, depression, panic attacks, chemical dependence and exarcebation of violence, among others, are components of the same phenomenological inputs.

As such, this scenario can be attributed to a set of problems whose structural causes presuppose the environmental degradation unchained by the modern goods production system, which, countersigned by the demands of a consumerist *modus vivendi*, provokes a huge pressure over the natural environment[1]. *Ipso facto*, such model legitimates the predatory use of natural resources, the authentic *raison d'être* of the modern era (WALDMAN, 2010, [and] CAVALCANTI, 1994, SANTOS, 1988).

In that sense, we must point to the links between this consumer society and a market dynamics strengthened by the concern with generating growing profits, stimulating an unceasing scaling of more production and more consumption. The result observed is the maximized withdrawal of natural inputs, a process made concrete by the transience with which modern society interacts with the material world, the matrix aspect of the social, economic and cultural system generated by the western world.

Regarding public health, the urban solid residues have an essential role in the epidemiological structure of communities. Indeed, we should highlight a line of transmission of diseases caused by vectors, which find in the garbage the appropriate conditions to proliferate[2]. *Pari passu*, when concerning environmental problems, the waste contaminates the air, the soil and, indirectly, the superficial and ground water. (MIRANDA, 1995)

From the environmental and the public health viewpoint, the incorrect disposal of the solid residues develops direct sequels (when there is close contact between the human organism and the pathogenic agents in the waste) and indirect sequels (through the amplification of some risk factor acting without control upon the surroundings), both incorporating a set of serious sanitary problems.

It should be remembered that this scenario of harmful effects - developing a list which gets even longer as research studies on the theme develop and advance - is generated by a mass of residues which, technically, due to its umbilical connection with a vast net of production and consumption flows, presents confirmed heterogeneity.

Such peculiarity allows specialized literature to identify, according to the physical taxonomy of the HR, three great

fractions, each one encompassing a complex web of implications. They would be: the organic fraction, damp or wet; the inorganic or dry fraction; and the remaining fraction, considered *unserviceable*.

The organic fraction, damp or wet, corresponds to the largest part of HR and consists basically of culinary garbage. The damp fraction may be reincorporated to the matter and energy cycles of nature through composting, the process which transforms the HR organic mass into an agricultural soil reconstructor and can be used in both public and domestic gardening. In Brazil, the organic fraction ranges, according to the source consulted, between 52 and 67% of HR (WALDMAN, 2014a e 2010; CEMPRE Informa nº 91, 2007: 3; NETO, 2007: 14; ABRELPE, 2007: 52 and 2006; CEMPRE, 2001).

The inorganic or dry fraction, otherwise, presents in its composition the "classic" materials coveted by the recycling industry, hence its designation as "recyclable fraction" in many texts - despite justified objections[3]. It consists of metals (steel, copper, brass and aluminum, in the form of electric cables disposed of); empty food, soda and other drink cans; glass (jars, bottles, pieces, broken pieces, and industrial and workshop fragments); paper and cardboard paper (of all sorts); and plastic (of all sorts). Although the existing data about the dry fraction is conflictive, it is believed that this segment represents something between 20% and 30% of the total mass of HR in Brazil (WALDMAN, 2014a and 2010: 82).

Finally, among the unserviceable materials we may list toilette trash, cardboard paper impregnated with oil, photos, dirty newspapers, fax paper, tissue and paper napkins, cellophane, ashes, cigarette butts, disposable diapers, pottery, mirrors, broken crystal, pesticide cans, light bulbs, fuses, debris, etc[4]. That fraction of USR would correspond to 15% of the gravimetrics of garbage (IBAM, 2001: 25).

As to the deleterious effects of garbage, they could be synthesized in a triple factoring as: occupation-related, environmental and alimentary. The occupation-related factor can be characterized by the contamination of collectors, who manipulate hazardous substances many times without any kind of protection. Although that concerns a small part of the population, it manifests aggressive contagion forms (SILVA, 2006, GONÇALVES, 2005).

Regarding the environmental factor, it is characterized by the dispersion of contaminating agents, originating from the putrefying food leftovers and dead animals, unchaining infestations through the slurry[5] both in the superficial and the ground water bodies. Another problem stems from the emissions of methane gas[6], an aggressive Greenhouse Effect Gas (GEE), generated by the deterioration of putrefiable remains brought about by anaerobic bacteria (LIMA et RIBEIRO, 2000).

To this list of negative developments - many of which provoke an impact on the environment in a vast scale in time and space - are added the ones pertinent to the dry fraction of waste. The refuse of contemporary world is characterized by its high level of harmfulness, latent danger and difficult deterioration, provoking somehow threats to all forms of life.

The list of elements persisting in the environment which have garbage as a vector consists of thousands of substances, a number that becomes larger day by day. Although the effects of synthetic materials are not fully known, the expansion of the research carried out in the last decades points to, for example, a wide range of side effects to people's health (*passim* WALDMAN, 2010).

At last, the alimentary factor, characterized by the contamination of the collectors or the residents around the dumps[7]. Basically, the problem occurs due to the ingestion of food leftovers and to the animals visiting such spaces, feeding on in natura residues disputed with humans. When interacting with the food chain, those animals can transmit a series of diseases, both to the herd and the human communities, the final link in the chain (NUNES MAIA, 2002).

In SISINNO's reflections (2002), the urban solid residues must be understood as a public health problem. The

consequences of their inadequate management and final disposal end up by reflecting directly or indirectly on the population's health. The risks related to the context and to the activity of household residues collection seem well defined in the eyes of the scientific community in general. The intoxication ways, toxicity itself and the damage to health and the environment - through collection and through the dumping and/or final confinement spaces inherent to the logistics of management of the residues - nowadays seem to be consolidated knowledge, based on related studies, all evincing a diversity of risks (PORTO *et al* JUNCA, 2004; VELLOSO SANTOS *et al* ANJOS, 1997; GONÇALVES, 2005).

The garbage collected daily in the urban areas of the cities is transported to the final destination areas. In most Brazilian cities, the residues are still indiscriminately thrown away in the open air, in the so-called dumps[8]. The inadequate final confinement of the urban residues provokes soil pollution and appears in the contamination of water (SOUZA *et al* MENDES, 2006).

The endangerment of the liquid bodies happens through phenomena such as leaching. In air pollution are noted gaseous effluents and particulates thrown at the atmosphere, originating from several anthropogenic activities. As a rule, such remains and effluents constitute the final result of the transformation of assorted materials and substances into useless residue, disposed of in defiance of the reuse and recycling strategies (VELLOSO, 1998).

The adverse effects of the city's solid residues on the environment and on collective and individual health are fully known and recorded by numerous authors and specialists. They point to the deficiencies in the collection and final disposal systems, as well as to the lack of a protection policy regarding the worker's health, both factors strongly affecting the configuration of harmful and undesirable effects (ACCURIO *et al*, 1998; ANJOS *et al*, 1995; ROBBAZZI *et al*, 1992).

According to a research study carried out by IPEA: Institute of Applied Economic Research (2012), 183,5 tons of solid residues are currently collected per day in Brazil, a service delivered to 90% of all households, representing 98% of urban households, but only 33% of the rural households. In the survey, organic matter would correspond to 51,4% of all daily household disposals. As to the dry fraction, its total amount would reach 31,9% of the total household waste (metal, plastic, glass and cellulotics).

Among the 5.565 Brazilian municipalities, a share consisting of 2.535 (45,55% of the total) confirms the existence of Garbage Selective Collection (GSC) programs. At first sight, the figures could point to progress in GSC initiatives. Nevertheless, the percentage can be questioned due to the fact that several municipal enterprises have merely symbolic meaning. Therefore, it is important to stress that some GSC activities deal only with implementing some "recycling island", making Voluntary Delivery Stands (VDS) available or simply formalizing agreements with collectors' cooperatives for the execution of such services (BONFIN, 2012).

In what concerns the number of Recyclable Material Collectors working in Brazil, IBGE (the Brazilian Institute of Geography and Statistics) estimates a body composed of 70 thousand workers[9]. However, two other institutes, Cáritas and Pólis, account for a demographic universe consisting of 500 thousand people. In turn, the Recyclable Material Collectors National Movement states that 800 thousand workers are active in recyclable material collection in Brazil. The gap suggested by the IPEA's analysis, taking all those sources into account, would signal to a set of between 400 and 600 thousand collectors in Brazilian cities (BRASIL, 2012).

Although there are no doubts about the importance of the urban sanitation activity to the environment and to the community's health, such perception has not been translated into effective actions that might produce qualitative change to the situation of the urban solid residues management in Brazil and Latin American nations, where it presents a wide range of deficiencies. The assertion is also valid when the focus of the debate are the collectors (WALDMAN, 2010 and 2008, FERREIRA *et al* ANJOS, 2001).

According to information from the Recyclable Material Collectors National Movement (RMCNM), the country has

around 600 formal cooperatives, comprised of approximately 40 thousand collectors. Nevertheless, only 2,5% of all municipalities keep a partnership with those organizations. From the existing cooperatives - comprising only 10% of all collectors - there are discrepancies in terms of logistics, equipment and level of efficiency. Several analyses point to 60% of the cooperatives offering bad working conditions and low remuneration to their members. The average income of this category of workers lies below the minimum wage, calculated between R\$ 420 and R\$ 520 (BRASIL, 2012).

The workers making a living out of recyclable material collection - understood as a means of survival and obtaining income - are still seldom studied from the viewpoint of public health, despite the growing number of academic studies focused on the category (PORTO *et alli*, 2004). The theme presents social relevance due to the large number of recyclable material collectors all over the country, even if we disregard the existence of a significant segment made up of the population living in dumps. Some studies brought to light that in the late 90's there were 45 thousand children and teenagers living and working in dumps (FERREIRA, 2005).

Consequently, reality as experienced by recyclable material collectors evinces precarious working conditions due to their close contact with refuse in disposal areas, landfills, dumps and city streets (ABREU, 2001).

In this order of explanation, surveys and investigations elicit a collector's profile subdivided into three categories: street collectors, cooperative collectors and dump collectors. Street collectors are the ones picking up residues from public places or from the waste delivered directly by the population, local stores and industrial plants. A distinctive trait of this group is that they possess their own cart or some other kind of vehicle adapted for the transportation of loads (MEDEIROS *et* MACEDO, 2006).

The cooperative collectors - also referred to as self-managed collectors - are those who deliver selective collection services with more value added, articulately and organizedly, generating work and income in a more systematized way. Objectively, the cooperatives generally allow for the absorption fringe urban workers, alien to the formal work market, inserting them in an institutional structure which ensures them, though minimally, some rights, income and citizenship (WALDMAN, 2010; LIANZA, 2000, MINAYO-GOMES, 1997).

Concerning dump collectors, the segment is defined by a context of clear social exclusion^[10]. Disconnected from any kind of assistance by the government, and working directly in the municipal final disposal spaces, dump collectors make up the most fragilized collecting population (FERREIRA *et* ANJOS, 2001).

In view of the high unemployment rate, the survival strategy found by this excluded population is to "collect garbage" as a means to obtain income to make a living. When collecting and sorting out recyclable materials - in dumps, walking around the streets or obtaining them from generating centers all over the country - the collecting population materializes an important link in the waste management system and in the recycling activity circuits (KIRCHNER *et* SAIDELLES, 2009; WALDMAN, 2008; MADRUGADA, 2002).

Despite their importance to the environmental balance, garbage collectors work without a contract and deprived of any social security benefits. Thus, they reveal traits similar to those of other groups excluded by Brazilian society, exposing themselves to risks and loads responsible for damage to their health (LAURELL *et* NORIEGA, 1989).

It should be remembered that to the situation above and to the low income brought by that kind of work is commonly added a scenario made up of diseases that aggravate the collectors' working and surviving conditions.

Undoubtedly collectors constitute a risk community, not only in terms of their own physical integrity and health, but also due to the consequences of a condition of social, cultural and economic marginality. Shaped in a context of evident socioeconomic asymmetry, the inequalities have constantly made collectors be seen through a universe of negative meanings inherent to the hegemonic perception of garbage (WALDMAN, 2011a, 2010 e 2008; GONÇALVES, 2004; CALDERONI, 1999).

It should be pointed out that there are few studies related to the health hazards inherent to the collection activity. Concomitantly, it is known that accidents such as cuts, perforations, burns and dermatitis happen proficuously, as a direct consequence of living around refuse, food poisoning threats and diseases provoked by parasites (CATAPRETA *et* HELLER, 1999).

The accidents during the collection activity generally originate from the precariousness and the lack of adequate working conditions. They are translated into several kinds of wounds, loss of members due to collectors being run over and also by dog, rat and poisonous insect bites. The esthetic issue, not always remembered, is quite importante as well once regular exposure to the residues would invite mockery and therefore a lot of psychological discomfort (FERREIRA *et* ANJOS, 2001).

Another block of possibilites of risk to these collectors' health and quality of life concerns the psychosocial problems. Acknowledgedly, the recyclable material collectors' life is marked by violence, humiliation and social exclusion; their occupation is seen as disqualified, unrecognized by society and the government (GESSER *et* ZENI, 2004).

It would be applicable to refer to the comments by CAVALCANTE *et* FRANCO (2007), for whom the collectors' activity routine is permeated by privations as well as invariably marked by hard working conditions, demanding a lot of physical effort. The daily working hours can last for over twelve hours uninterruptedly. Unequivocally, collection is a strenuous activity, mainly if we consider the conditions to which workers are submitted.

A good example of such conditions are the carts pulled manually through the streets, transporting in average more than 200 kg of refuse, regularly facing heavy traffic and the hostility of drivers. Collectors transport the equivalent to 4000 kg monthly. It is known that collectors cover more than 20 km per day, an effort that often receives in turn the exploitation of warehouse owners dealing recovered materials (scrapped material dealers), who pay them very low values or take advantage of those collectors' social fragility.

The precariousness of work contributes to the prevalence of this scenario: this informal occupation makes collectors vulnerable once they are not entitled to labor and/or welfare rights. An apparently contradictory situation, informality leads collectors to move in a parallel market, governed by presuppositions which, paradoxically, link their work to highly capitalized economy circuits. The nexus is maintained by the absence of recognition for their work by a large share of the public opinion (WALDMAN, 2011a, 2010; GUIMARÃES, 2000).

Meanwhile, as a form of reaction to unemployment and to the situation of exclusion, a tendency to getting organized in waste recycling cooperatives, inspired and supported by the principles of solidary economy, has materialized in the last years. The lack of opportunity in the work market has induced a significant contingent of unemployed workers to join collection as a means to guarantee their survival.

Traditionally in Brazil, the *modus operandi* of material recovery is ensured by the informal collection of materials found in the streets and dumps. We should note that, despite discriminated and disregarded by the fragile links with the *status quo*, collection configures an activity which concretely stops these workers from being abducted by even more somber forms of social exclusion. In this line of argumentation, the activity becomes a kind of last link connecting collectors to the social system which excludes and rejects them (WALDMAN, 2011a and 2010; SINGER, 2004; REGO *et alli*, 2002).

Another relevant view is that the working conditions, though extremely unhealthy, allow for a certain "freedom" concerning working hours and behavior codes which does not exist in fixed job situations; and that is the reason why not few collectors refuse job opportunities in the formal work market, preferring the activities related to recyclable material sorting. Garbage collectors are responsible for practically all material recycled by the national industry[11], placing Brazil as one of the top countries in the ranking of recycling of materials such as aluminum,

plastic, paper and cardboard paper (Cf. WALDMAN, 2011a and 2010; CEMPRE, 2009a, 2009b; MORAES, 2007).

In this pathway, despite all difficulties related to work, made more serious by the lack of government support and by several kinds of social prejudice, these informal collectors manage to survive and at the same time take care of the environment, that is, the space common to most Brazilians: the urban space. Therefore, we can consider garbage collectors as environmental and economic agents. Even better, as *de facto*, though not *de jure* workers (GONÇALVES, 2005).

That having been said, the current study aims to analyze the profile of collectors and their perception of their situation as individuals and citizens, as well as the problems involving garbage, particularly recyclable materials.

Methodology

The research is characterized as quantitative, descriptive and exploratory, and was carried out in the city of Poços de Caldas, an urban centre located in the South of Minas Gerais and currently having 154.000 inhabitants[12].

The focus of this research is on the work developed by collectors working in the streets and/or participating in some form of association. The population under study was comprised of 160 recyclable material collectors, among whom 30 belong to the Cooperative, 100 are street collectors and 30 are controlled landfill collectors[13].

For the collection of data a questionnaire created and tested by the authors was used, comprising 24 questions involving sociodemographic information and questions about the collectors' performance. Data collection was carried out from September to November 2011.

The participants in the research were 96 collectors, among them 70 city street collectors and 26 recycled material cooperative participants, who voluntarily accepted to participate in the 2011 research.

After accepting to participate in the research, the collectors received a briefing, highlighting goals and ensuring privacy as to the preservation of their identity. The questionnaire forms were filled by the collectors and, whenever necessary, they were helped by the interviewers.

The city of Poços de Caldas produces around 150 tons of solid residues per day and, according to the current model, forwards almost all household solid residues collected (around 70%) to the city's controlled landfill. The management of sanitary cleaning is a municipal attribution and the Public Service Bureau takes on responsibility for the operationalization of the activities.

Regarding the alternatives for garbage final disposal, CONSONI *et alli* (2000) state that the landfill presents the fewest handicaps as equipment meant to be used as final confinement space, a verdict accepted mainly when we take into consideration the reduction of the impact provoked by the disposal of the urban solid residues.

Another method used for the final disposal of residues is the controlled landfill. According to ROTH *et alli* (1999), this kind of equipment is less harmful than the dumps since the waste disposed of in the soil is later covered with earth, which ends up by reducing the local pollution. Nevertheless, this solution is less effective than that offered by the sanitary landfills since the mass decomposing continues to be a source of innumerable problems: slurry and methane emissions, and *mutatis mutandis*, the continuity of health hazards to the population and all forms of life.

In 2006 the city passed the 8.316 municipal legislation, from October 13, 2006, which prescribes on the Municipal Policy concerning Reusable Solid Residues and Incentives to Garbage Selective Collection in Poços de Caldas. After the prescription of the legislation, the government changed its relationship with recyclable material collectors significantly, incorporating them as priority partners in the Selective Collection Project implemented by the Solid

Residue Management Municipal Program.

The sociopolitical context that fostered this change in dealing with the issue of collectors in Poços de Caldas inserts itself nationally in the process of expanding the public management's democratization; and, internationally, in the discussion about environmental sustainability.

With this partnership, the government disconnects itself from the role of strengthening the image of collectors as urban fringe workers and starts, otherwise, to propose a new reading of such perception, now stressing the importance of collectors as selective collection professionals, supported by their representative body, the *Ação Recicla (Recycling Action)*, in the scope of the Selective Collection Project.

The *Ação Reciclar* emerged as a group of approximately 36 collectors that already got organized in groups and worked buying materials from collectors and reselling them to recycling companies as "middle men".

Nowadays the cooperative has an agreement with the municipal government where the latter provides space and operational facilities meant help the collectors, such as collecting trucks. The *Ação Reciclar* follows a collection schedule around the streets, including mainly open markets, where the quantity of recyclable residues dumped is larger. The association also receives donations of recyclable solid residues from residents trying to find adequate destination for them.

To meet the ethical demands of Resolution 196/96 from the Health National Council, the collectors were invited to sign an Informed Consent Form, in two copies, one remaining with them and another, with the researchers. They were guaranteed that they would neither run risks nor have costs and/or monetary benefits when joining the population researched, and that they could give the research process up at any time if they so desired.

Results

The research participants' sociodemographic data was analyzed initially, as the researchers tried to establish relationships considering gender, schooling or formal education, marital status, age and children, among other criteria. Among the *Ação Reciclar* Cooperative's collectors interviewed, 23,1% were male and 76,9%, female, allegedly because the work at the sorting lines demands less effort.

Concerning the age bracket distribution, a large share of collectors (52,2%) was somewhere between 25 and 45 years old; and 47,8%, between 45 and 65 years old.

As to schooling or formal education, 11,5% had finished highschool and 50%, middle school. Among the interviewees, more than half (58,3%) had been working as collectors for less than 5 years; and around 30%, for from 5 to 10 years.

Regarding the connection between work and diseases and related symptoms, when the topic concerned accidents, most collectors (42,3%) reported having had accidents. Among these cases, cuts by glass and perforations by other materials were reported more frequently.

As to diseases transmitted by garbage, 69,2% of those collectors did not know anything about the subject. However, laboratory analyses of the fecal samples of 33% of cooperative workers detected *Entamoeba coli* cysts, 6,7%, *Enterobius vermiculares*, 13%, *Giardia lamblia* cysts and 20% *Ascaris lumbricoides* eggs (table 3).

Most workers frequently felt lower limb pains and 20% claimed to feel mainly lumbar pain, which had to do with bad posture and the excessive weight carried during their daily work. Due to direct contact with materials of all sorts, occasionally toxic, a significant group reported irritated eyes (28,6%) and, among them, 17,1% claimed to have skin rash. Another important claim in the answers was that 11,4% among women had become pregnant

during the time they worked as collectors.

Concerning the research with street collectors, most of them were aged between 50 and 59 years old and male (65,1%). In this group, 57,1% had not finished middle school, as illustrated by chart 1. In terms of marital status, 33% were married; 56% had children.

Collection was the only source of income for 60% of all collectors interviewed; 83% reported they did not receive any support from either government or social institutions; and 85% had no interest in joining the cooperative because they enjoyed the freedom they had in the streets.

As to the use of Individual Protection Equipment (IPE), most collectors, 58,82%, confirmed they used the equipment during the day's work, although the only items observed were caps.

Half of the interviewees considered the financial return of their activity enough to support their families.

Regarding liquid monthly income, 60% got less than a minimum wage and 44% had another source of income (chart 2). The means of transportation most used by collectors were still the cart (55,7%) and the horse cart (30%) according to chart 3.

Discussion

An important piece of data is that most of the collectors interviewed were aged between 19 and 45 years old. One of the main characteristics of this segment of young workers was the fact that many of them had never had a formal job and had collection as their first working experience.

In a research study carried out by Bosi (2008), the age factor revealed a predominance of people between 30 and 60 years old. The population of collectors is basically made up of young adults, although there is great flexibility in the age structuring of the group (PORTO *et alli*, 2004).

According to CARMO (2005), age is one of the factors which mostly influence the style of participation in the formal urban work market, which in Brazil favors the recruitment of youngsters. However, among the collectors interviewed, the majority reported age as being an obstacle when it comes to rejoining the formal work market. In collection, though, age does not stand as an excluding factor since collection is an activity demanding no prerequisites (ALMEIDA *et alli*, 2009).

Among the interviewees, the majority had finished only middle school, which reveals their low schooling. The issue of formal education is an important aspect and must be taken into account in the analyses concerning the access to work and the level of income.

Still on the subject, the interviews detected that most of the collectors started their labor activities as children aiming to add to the family income. This precocious insertion in the informal work market made it difficult for them to start school and continue studying, which later became an obstacle to their joining the formal work market (VIANA, 2000).

The correlation between low schooling and the collection activity had been confirmed by previous research carried out by SILVA (2002) and MAGERA (2003), who came to the conclusion that this connection leads to exclusion from the formal work market. About this, despite the value many collectors attribute to formal instruction as a means to ensure better living conditions to their children, none of the interviewees contemplated the expectation of going back to school in order to try to get another kind of occupation.

Concerning recyclable material collection, the most useful kind of knowledge mentioned was basic arithmetic, used for checking weights and the payment for the material collected. Thus, the researchers having quantified the

information about the collectors' schooling, the scenario was strongly characterized by extremely low formal instruction.

The interviewees believe that the main reason leading them to work as collectors is "necessity", the activity being their only "opportunity". As evaluated by MEDEIROS *et* MACEDO (2007), work plays an essential role in people's lives and it is a means of survival and social integration means since it allows for personal relationships, social inclusion and the feeling of belonging to a group.

According to MIURA (2004), a percentage among collectors comes from the unemployed population that, unfavored by age, social condition and low schooling, cannot find space in the formal work market.

The study also detected that most of the women interviewed were in their fertile age bracket. To them, the work of collection becomes even more strenuous because it adds to their domestic work routine. Therefore, this public demands public policies related to women's health and to child care, such as day-care centers and pre-school facilities, so that the women can be better absorbed by the work market (FERREIRA, 2005).

The work of collection has become the main and, in most cases, the only survival means for breadwinning women, who work even during their pregnancy periods. In the case of men, besides the work of collection, they also deliver small services of masonry, gardening, baking and caretaking (SOUZA, 1995).

In that sense, the phenomenon of the *feminization of poverty* should be taken into consideration, associated, especially in the context of peripheral countries, with the globalization processes, the productive restructuring processes, the precariousness of work and the concomitant potential vulnerability of specific social groups, among them women.

The increase in the working class's vulnerability affects mostly women and children. That is, it affects mainly the family nuclei in which women are the principal or only providers, for no other reason than the lack of male adults to share the responsibility for the family's survival (LEAL *et alli*, 2002).

Most of the cooperative collectors and other collectors reported work related wounds due to the lack and/or incorrect use of IPE. PORTO *et alli* (2004) highlight the fact that collectors see garbage as a means of survival, and health as capacity for work, tending to deny the close connection between work and health problems.

According to MIURA (2004), although collection happens amid unfavorable conditions and does not produce changes in the structure of social inequality, it allows for social insertion, even if temporarily. Still according to the author, the organization of collectors in cooperatives enables a more favorable working condition, with a more adequate physical structure and better opportunities of remuneration, both from the material and the social perspective.

Final considerations

Despite all the challenges inherent to the work performed by collectors, the solid residues are a market niche that cannot be ignored. In collection there is a significant possibility of social inclusion to people that would probably not have other opportunities in the work market.

The results of this research allowed for greater understanding of the problems related to garbage and the perception of the recyclable material collectors', in the social complexity which involves them and related problems, as the neglect from society and the city.

The research also pointed out time management as a benefit: despite having tiring working hours, collectors are

independent as in how they manage and define their working schedules; therefore, they do not have to ask their bosses for a time out or permission to go to school meetings or to talk to their friends.

Another observation is that the interviewees' monthly income seems to influence the collectors' permanence at work, since age and low schooling make it difficult for them to get inserted in the work Market, and, therefore, for them to earn a salary equivalent to the income obtained with the sale of the recyclable materials collected.

Thus, it is important to offer these collectors healthy, adequate and decent working conditions, encouraging their permanence in the recycling economic chain.

Through collection, collectors try to find conditions allowing them to be included as subjects in society. Making the adequate protection equipment available to them, and making them aware of the importance of its use, would maybe help to minimize the accident rate in this kind of work.

Similarly, collective protective and hygiene measures could be adopted. This way, involving collectors effectively in any process of change is one of the aspects considered fundamental to reaching any improvements in their current living and working conditions.

Moreover, the institutions involved - environmental, social and sanitary - should effect a change in their paradigms, reviewing their points of view and accepting what reality points to, especially pondering what concerns the objective conditions ruling the collector's routine, essential aspects to qualify and dignify the collecting population's living and working conditions (WALDMAN, 2007).

This way, the attribution of positive meanings to the activity of residue collection, such as professional recognition, the acknowledgement of the benefits it brings society and the distinction between collectors (people) and their work material (waste), can contribute to greater popular involvement, mainly in what concerns the urban environment's balance, selective disposal and the appreciation of recyclable residues.

Notes

[1] In fact, consumerism is dictated by the needs of an economy based on mass production, a paradigm originating in the Industrial Revolution, and particularly stressed by the Ford ethics and the parameters of classic economy. In that view, the consumer is, therefore, induced to exacerbated consumption through advertising and marketing strategies, understood as instruments to keep a permanent frenzy in the productive chain.

[2] Dumps, particularly, are of great use as all-proof shelters to pathogenic agents. Flies, bugs, cockroaches, rats and vultures are some of the life forms which - side by side with others less often mentioned - sneak into the urban scenario, predispose sanitary risks and spread dangerous microorganisms. Among the diseases transmitted through the association of such vectors with refuse are toxoplasmosis, trichinosis, taeniasis, hantavirus, leptospirosis, bubonic plague, breakbone fever, malaria and yellow fever (Cf. NETO, 2007: 24/41).

[3] A fact which deserves attention is that the organic fraction, exactly due to its taxonomic profile, integrates much more quickly to the cycles of nature, thus being recyclable. In that sense, identifying only the dry fraction as recyclable incurs conceptual and operational incorrectness.

[4] It is important to stress that the definition "unserviceable" inserts historical character, making categorical, generic and random conceptualizations unfeasible. That having been said, contradicting the myth of the "total use of waste", unserviceable refuse exists and will continue to exist.

[5] Besides "slurry", the liquid receives other designations: percolate, leach, "*chumeiro*" and black liquor. We should heed the virulence of this liquid effluent: the slurry can provoke 200 times more impact than sewage in

what concerns the oxygen biochemical demand (OBD). That is, its presence in the environment is characterized by its powerful capacity for destruction when in contact with fresh water, a fact that concretely articulates the issue of solid residues with that of the water resources (WALDMAN, 2011: 14).

[6] A piece of information not highlighted enough despite its importance, methane constitutes a crucial item in the climate change agenda. Although methane emissions are inferior to carbon dioxide emissions (considered the flagship among GEE), is believed that in Brazil, due to their high level of organic matter, the HR correspond to 12% of gas emissions, the final disposal corresponding to 84% of this amount (Cf. WALDMAN, 2010: 109; IBAM, 2007a and 2007b).

[7] In a summarized definition, dumps are residue deposits without any previous treatment, originating from several sources (civil construction sites, hospitals, industrial plants, etc) and whose disposal is done regardless of any geotechnical studies, allowing effluents such as slurry and methane to flow freely, affecting the environment and people around.

[8] Risking to incur misunderstandings, it is necessary to focus on gravimetrics data and on the destination of USR in Brazil. It is a fact that, from the *total mass of collected refuse*, 56,8% goes to sanitary landfills, 23,9%, to other landfills known as "controlled landfills" and 19,3% goes to dumps. However, even though dumps receive a smaller share of the total amount of garbage, they correspond to 50,8% of the garbage final destination municipal equipment. That is, they exist in larger number and in poorer cities - in general involving contexts where nature is still preserved - and provoke tremendous impact. To that are added the problems of inactive dumps, whose number would be around 15.000 pieces of equipment spread around the country (WALDMAN, 2011: 73-74).

[9] To GONÇALVES (2001), the recyclable material collectors, designation formally attributed to the profession in 2001 by the Brazilian Code of Occupations (BCO), "are people who live and work, individually and collectively, in the activity of collection, sorting and commercializing recyclable materials".

[10] The specificity of this last category explains that a collection of works would choose the terminology *dump population*.

[11] Statistics vary enormously, but no sources point to less than a 95% participation of collection in the reuse of materials by industry.

[12] IBGE's (Instituto Brasileiro de Geografia e Estatística) estimate for July 1st, 2012: www.ibge.gov.br/

[13] The so-called "controlled landfill" is scarcely different from the dump model, and is characterized mostly by some kind of care in minimizing the exposure of waste and accommodating it with tractors and soil layers. It would constitute a maskarade version of dumps.

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Tables and charts

Table 1: Distribution of questions made to recyclable material collectors from the Cooperative, according to sociodemographic characteristics, in Poços de Caldas, MG, 2011.

Table1- Distribution of questions made to recyclable material collectors from the Cooperative, according to sociodemographic characteristics in Poços de Caldas, MG, 2011

Variables	Total	
	f	%
Sex	Female	20 76,9
	Male	6 23,1
	TOTAL	26 100,0
Age Profile	From 18 to 35	9 34,6
	From 36 to 50	9 34,6
	>50	8 30,8
	TOTAL	26 100,0
Individual Income	Up to 1 min. wage	20 76,9
	2 minimum wages	6 23,1
	3 minimum wages	0 0,0
	>4 minimum wages	0 0,0
	TOTAL	26 100,0
Daily work load	6 hours	1 3,8
	8 hours	19 73,1
	10 hours	4 15,4
	12 hours	2 7,7
	TOTAL	26 100,0

Table 2: Distribution of questions made to recyclable material collectors from the Cooperative, according to characteristics of occupational health in Poços de Caldas, MG, 2011.

Table 2- Distribution of questions made to recyclable material collectors from the Cooperative, according to occupational health characteristics in Poços de Caldas - MG, 2011

Variables		(to be continued)	
		Total f	%
Schooling or Formal Education	Literate	6	23,1
	Elementary/		
	Middle school	13	50,0
	Highschool	3	11,5
	College	1	3,8
	TOTAL	23	88,5
Are you aware of the diseases transmitted by garbage?	Yes	8	30,8
	No	18	69,2
	TOTAL	26	100,0
Have you ever gotten hurt during the work day?	Yes	11	42,3
	No	15	57,7
	TOTAL	26	100,0
Do you see cuts and scratches as work accidents?	Yes	5	19,2
	No	21	80,8
	TOTAL	26	100,0
Do you use EPI (Ind. Protection Equip.) during the work day?	Yes	21	80,8
	No	5	19,2
	TOTAL	26	100,0
Have you ever gotten hurt even using EPI?	Yes	6	23,1
	No	20	76,9
	TOTAL	26	100,0
Have you ever been pricked/bitten by any animals during the work day?	Yes	3	11,5
	No	23	88,5
	TOTAL	26	100,0
Has your skin ever been hurt by any chemical agents?	Yes	2	7,7
	No	24	92,3
	TOTAL	26	100,0

Table 3: Results distribution from stool analysis undertaken at Cooperativa Ação Reciclar in Poços de Caldas - MG, 2011.

Table 3: Results distribution from stool analysis undertaken at Cooperativa Ação Reciclar in Poços de Caldas - MG, 2011 n= 15			
Variable	Total		
	f	%	
<i>Entamoeba coli</i> cysts	Positive	5	33,3
	Negative	21	140,0
	TOTAL	15	100,0
<i>Enterobius vermiculares</i>	Positive	1	6,7
	Negative	25	166,7
	TOTAL	15	100,0
<i>Giardia lamblia</i> cysts	Positive	2	13,3
	Negative	24	160,0
	TOTAL	15	100,0
<i>Ascaris lumbricoides</i> eggs	Positive	3	20,0
	Negative	23	153,3
	TOTAL	15	100,0
Source: research data			

Chart 1: Age bracket distribution of street collectors in the city of Poços de Cladas, Minas Gerais, Brazil, from September to November 2011.

Chart 1: Age bracket distribution of street collectors in the city of Poços de Caldas, Minas Gerais, Brazil, from September to November 2011.

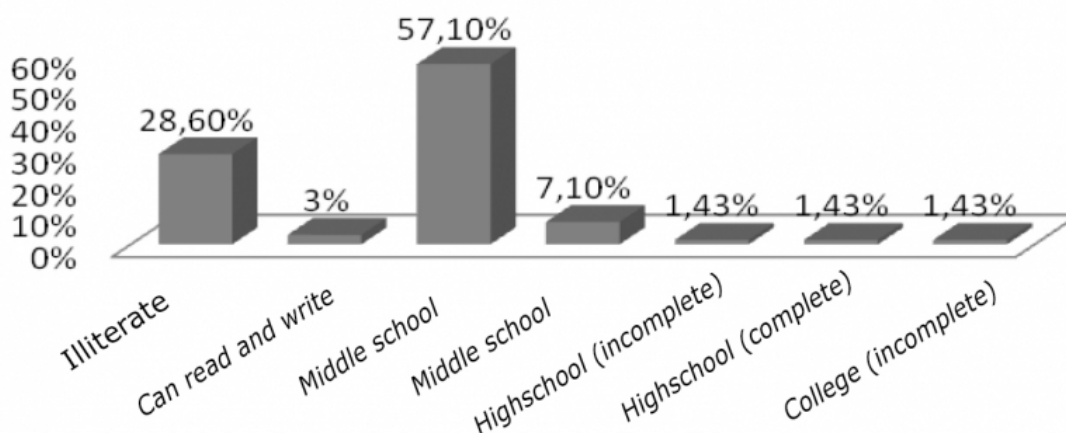


Chart 2: distribution of income among street collectors in the city of Poços de Caldas, Minas Gerais, from September to November 2011.

Chart 2: distribution of income among street collectors in the city of Poços de Caldas, Minas Gerais, from September to November 2011.

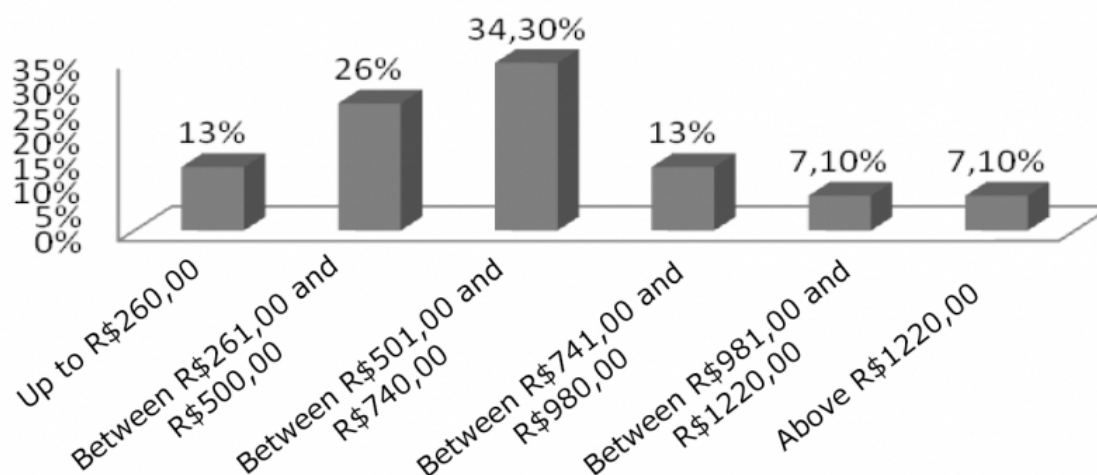


Chart 3: Means of Transportation used by street collectors in the city of Poços de Caldas, Minas Gerais, Brazil, from September to November 2011.

Chart 3: Means of Transportation used by street collectors in the city of Poços de Caldas, Minas Gerais, Brazil, from September to November 2011.

