

**SOCIAL-DEMOGRAPHIC AND HEALTH CONDITIONS IN WASTE PICKERS
IN THE CITY OF CARTAGENA DE INDIAS (COLOMBIA)**

**CONDICIONES SOCIODEMOGRAFICAS Y DE SALUD EN RECICLADORES
DE LA CIUDAD DE CARTAGENA, COLOMBIA**

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Abstract

The inadequate management of solid waste is widespread in Colombia, the district of Cartagena de Indias is no stranger to the inappropriate integral management of solid waste that, as described above, becomes a risk factor for the health of people, reason for which this research was proposed that aims to diagnose sociodemographic and health conditions in waste pickers in the city of Cartagena, Colombia. 206 recyclers located in 4 recycling points of the city of Cartagena participated during the first period of 2018. By means of two instruments the socio-demographic and health characteristics of the participants were evaluated. The data collected were analyzed using the statistical program SPSS version 24.0, where the descriptive statistics were applied. The average age of the participants was 37 years \pm 2 SD, the male sex predominated with 71.4%, with an educational level lower than the basic secondary in 39.7% of the participants. The monthly income of 56.8% of the recyclers is based on a minimum wage in Colombian pesos, and is affiliated in the subsidized health regime. In addition, it was evident that the participants presented nutritional alterations such as obesity and overweight, consumed substances harmful to health such as tobacco 7.3% and liquor 60.8% and presented lumbar pain and headache during the last week. The recyclers of the city of Cartagena, are mostly men of productive age, who belong to the subsidized regime, and who have monthly income of a minimum wage.

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Fecha de recepción: Septiembre de 2018 / Fecha de aceptación en forma revisada: Diciembre de 2018

Keywords: Socialdemographic, health conditions, waste pickers,

Resumen

La gestión inadecuada de los residuos sólidos está muy extendida en Colombia, el distrito de Cartagena de Indias no es ajeno a la gestión integral inadecuada de los residuos sólidos que, como se describió anteriormente, se convierte en un factor de riesgo para la salud de las personas, razón por la cual esta investigación tiene como objetivo central diagnosticar las condiciones sociodemográficas y de salud de los recicladores en la ciudad de Cartagena, Colombia. 206 recicladores ubicados en 4 puntos de reciclaje de la ciudad de Cartagena participaron durante el primer período de 2018. Mediante dos instrumentos se evaluaron las características sociodemográficas y de salud de los participantes. Los datos recopilados se analizaron utilizando el programa estadístico SPSS versión 24.0, donde se aplicaron las estadísticas descriptivas. La edad promedio de los participantes fue de 37 años \pm 2 DE, el sexo masculino predominó con 71.4%, con un nivel educativo más bajo que el secundario básico en 39.7% de los participantes. El ingreso mensual del 56.8% de los recicladores se basa en un salario mínimo en pesos colombianos y está afiliado al régimen de salud subsidiado. Además, fue evidente que los participantes presentaron alteraciones nutricionales como la obesidad y el sobrepeso, consumieron sustancias nocivas para la salud como el tabaco, el 7,3% y el licor, el 60,8%, y presentaron dolor lumbar y dolor de cabeza durante la última semana. Los recicladores de la ciudad de Cartagena, son en su mayoría hombres en edad productiva, que pertenecen al régimen subsidiado y que tienen ingresos mensuales de un salario mínimo.

Palabras clave: sociodemográfico, condiciones de salud, recolectores de basura.

Introduction

The accelerated increase in population and industrialization has led to a progressive increase in urbanization, and as a consequence of this, the increase in the production of solid waste that alters the environment and affects all communities, especially the underdeveloped countries (Schwarzenbach et al., 2010). This phenomenon becomes an environmental problem that results as a consequence of the social, cultural, economic and political conflicts of a given society (Severiche et al., 2016; Castro, 2014). The generation of solid waste is associated with four essential factors: the number of inhabitants, the amount of solid waste, its biodegradability and the non-existent management plans, which

lead to aesthetic, environmental, public health problems, land devaluation, others. This is a topic of interest, given its environmental and health implications, which is why we have been looking for ways to control the problems generated: The strategy is environmental management framed in the pillars of sustainable development (Okot-Okumu y Nyenje et al., 2011).

As a result of this problem, a strategy known as recycling has emerged, which despite being an ancient practice, only in recent year's reference has been made to this topic. Recycling should not be confused with reuse, which refers to the recovery of waste materials that after slight modification are reused for what they were originally manufactured; recycling on their part requires that the material collected have a physical, biological or chemical processing, so that the raw material can be used in the manufacture of a new product (Medina, 2017).

This strategy helps to reduce waste at low cost, and has advantages in the economy of industries due to the decrease in raw material prices, and has become an income option for communities with scarce resources and lack of opportunities to stable employment (Nietzel et al., 2013). The phenomenon of the collection and sale of recyclable materials has spread in several Latin American countries and in the rest of the world. In general, it is usually a widespread activity in densely populated cities, and although this task can be traced back to the end of the 19th century, it had a quite noticeable increase during the last decades due to the scarcity of employment (Villanova, 2012).

According to the estimates of the World Bank, there are approximately 15 million people in the world who subsist on the recovery of recyclable material, of which four million do so in Latin America; within this trade they recycle mainly cardboard, paper, glass, plastic or metal, and make this activity their main source of income. Generically these people are known as "informal recyclers", and, despite not having exact estimates, the data indicate that there are more than 200,000 families (approximately 500,000 people) living in this region (Bleck y Wettberg, 2012). The vast majority of waste pickers carry out their activity in precarious sanitary conditions, exposed to high job instability, without any type of occupational safety or link with the social protection system and, in very few cases, integrated into the formal management system municipal solid waste region (Gomez y Severiche, 2018; Bleck y Wettberg, 2012).

The handling of solid waste involves exposure to different risk factors that affect the health of human beings: these include exposure to microorganisms, vapors and toxic leachates derived from the decomposition of garbage, extreme temperatures, ultraviolet

radiation, discrimination and rejection by the community, vehicular traffic and excessive physical charges (Makuma et al., 2016; Ballesteros et al., 2008) These risk factors are enhanced because many recyclers enter the trade ignoring the different risks to which they will be exposed and the diseases and / or injuries that can be caused by them, which qualifies informal recyclers as the most vulnerable population to health problems (Gomez y Severiche, 2018). Ballesteros et al. (2008) identified the biological risk factors to which informal recyclers are exposed the city of Medellín, and found factors related to the contact of decomposing material (96.6%), contaminated material (96.6%), animals (62.5%) and arthropods (79.5%). Measures to protect them from biological risk factors are used in less than 52% of waste pickers; in addition, only 13.6% of these are vaccinated, which increases the probability of getting sick in this population.

The inadequate management of solid waste is widespread in Colombia, the district of Cartagena de Indias is no stranger to the inappropriate integral management of solid waste that, as described above, becomes a risk factor for the health of people, reason for which this research was proposed that aims to diagnose sociodemographic and health conditions in waste pickers in the city of Cartagena, Colombia.

Materials and Methods

Descriptive study involving 206 recyclers located at 4 recycling points in the city of Cartagena, during the first period of 2018. Two instruments were used to collect the information; one corresponding to the sociodemographic conditions and the other to the health conditions of the participating recyclers, similar to what was done by Gómez et al. (2018).

The data collected were typed in a Microsoft Excel spreadsheet, statistically analyzed through the SPSS program version 24.0 and a descriptive analysis was made for each of the variables studied.

The research was based on the ethical parameters contained in Resolution 00843 of 1993 of the Ministry of Health of Colombia, in which this research was classified as a minimum risk for the participants, the incorporation to the research was done voluntarily, and after an accurate explanation about the scope and objectives of it. Finally, an informed consent was completed by each of the participants.

Results

The recyclers participating in the study had an average age of 37 ± 2 SD, the male sex predominated with 71.4% (147), and the religion professed by 51.9% (107) of the participants was the catholic Regarding the educational level, 39.7% (82) of the participants had less than basic secondary education, and it was also evident that 4.4% (9) of the recyclers do not have studies. The couple relationship is shown in Table 1 and is established mainly by free union and marriage by 67% (138).

Table 1: Demographic characteristics of waste pickers Cartagena, Colombia. 2018

Sex	N	%
Female	59	28,6
Male	147	71,4
Religion	N	%
Catholic	107	51,9
Evangelical	52	25,2
Any	40	19,4
Other	7	3,4
Scholarship	N	%
Without studies	9	4,4
Complete baccalaureate	73	35,4
Incomplete Baccalaureate	39	18,9
Complete Primary	18	8,7
Incomplete Elementary	25	12,1
Technical	23	11,2
Technologist	8	3,9
Academic	11	5,3
Type of union	N	%
Married	28	13,6
Divorced	1	0,5
Separated	32	15,5
Single	34	16,5
Free Union	110	53,4
Widower	1	0,5
Total	206	100

98.1% (202) of the recyclers live in the urban area of Cartagena, and have monthly income of a minimum wage of 50.2% (103), followed by a proportion of 30.2% (62) in the which there is monthly income below a minimum legal wage in force in Colombia. In Table 2, most participants have their own home, and have basic public services such as, Aqueduct, electric power, natural gas and sewage.

Table 2. Socio-economic conditions of waste pickers Cartagena, Colombia. 2018

Residence area	N	%
Rural	4	1,9
Urban	202	98,1
Monthly income	N	%
1 Minimum salary	103	50,2
2 minimum wages	24	11,7
3 minimum wages	11	5,4
4 or more minimum wages	5	2,4
Less than a minimum wage	62	30,2
Level of the sisben	N	%
1	125	60,7
2	8	3,9
3	6	2,9
4	2	1
Does not know	64	31,1
Does not have	1	0,5

Type of Housing	N	%
Leased	68	33
Family	19	9,2
Own	119	57,8
Energy	N	%
Do not	3	1
Yes	203	98,5
Natural gas	N	%
Do not	47	22,8
Yes	156	75,7
Aqueduct	N	%
Do not	10	4,9
Yes	196	95,1
Sewerage	N	%
Do not	69	33,5
Yes	137	66,5
Landline	N	%
Do not	167	81,1
Yes	39	18,9
Total	206	100

86.9% (179) of the participants in the study are affiliated to the social security health regime, mainly located in the subsidized regime and a small proportion are without affiliation and affiliated to the special regime. Nutritional alterations were observed in some participants, among which were: overweight 34.3% (71), type I obesity 11% (24) and in severe and moderate thinness 1% (2). Table 3 shows that participants consume substances that are harmful to their health, such as liquor and cigarettes, 15.5% of them have suffered from an accident at work (32), and in the last week they have sometimes suffered conditions such as headaches 44.2% (133) lumbar pain 44.2% (133) and physical fatigue 41.10% (41) of the participants in the study. In addition, 69.4% (153) of the participants reported the presence of rodents in the workplace.

Table 3: Health conditions of waste pickers Cartagena, Colombia. 2018

Health regime	N	%
Contributory	59	28,6
Special	3	1,5
Without affiliation	27	13,1
Subsidized	117	56,8
Body Mass Index	N	%
Acceptable thinness	5	2,5
Moderate thinness	1	0,5
Severe thinness	1	0,5
Obese: type I	24	11
Obese: type II	3	1,5
Obese: type III	2	1
Normal weight	99	48,5
Overweight	71	34,3
Cigarette consumption	N	%
Do not	191	92,70%
Yes	15	7,30%
Liquor Consumption	N	%
Yes	116	39,2
Do not	180	60,8
Perception of health status	N	%
Excellent	43	7,6
Very good	24	8,5
Good	83	43,9
Regular	53	37,4
Does not know	3	2,6
Accident	N	%
Yes	77	37,4
Do not	129	62,6
Origin of Accident	N	%
Job	32	15,5
Home	97	47,1
Does not apply	77	37,4

Low back pain during the last week	N	%
Sometimes	133	44,2
Never	102	33,9
Always	66	21,9
Headache during the last week	N	%
Sometimes	133	45,90%
Never	62	42,80%
Always	11	11,40%
Physical tiredness during the last week	N	%
Sometimes	128	41,00%
Never	50	32,10%
Always	28	26,90%
Presence of rodents in place of work	N	%
Yes	153	69,4
Do not	53	30,6
Total	206	100

Discussion

The recovery of solid waste has become an option of economic income for a significant part of the population of the city of Cartagena, in this study 206 people depend economically on this activity, mostly men of productive age and with an educational level lower than the basic secondary. Results similar to those obtained by Ballesteros et al. (2008) in the city of Medellín, in which young men predominated and mostly had a basic level of primary and secondary school. Young people who do not have a technical or university education are more likely to be working in the informal sector because in Colombia unemployment rates continue to be high and a way to generate income for the household is to start informal activities, among those, the recovery of solid resources (Gupta, 2014). The low educational level is a characteristic in the informal work sector because people do not have labor ties with an entity, and training processes are not required for them to develop their work activity (Valdes-Serran, 2013).

The monthly income of the participants is mainly based on one or less of a legal minimum wage in force for the year 2018 of Colombia, this is related to what was evidenced by Villanova (2012) in Spain, where the monthly salary of the recuperators does not reach cover the basic basket, this activity is characterized by having low income for recuperators, which often is not enough to cover basic needs, which ends up affecting the living conditions of the population, and triggers a cycle of poverty and social exclusion (Makuma et al., 2016).

The vast majority of participants live in stratum 1 that belong to the subsidized health regime and some do not have any type of affiliation, similar to that obtained by López (2015), where he found that more than half of the participants they live in stratum 1 and belong to a subsidized regime. Being affiliated with the health security system in Colombia allows workers who do not have easy access to have access to care for the treatment of the conditions that are occurring, but he does not have this, prevents people from access to health promotion and disease prevention services, seeing that the costs of the care provided to them are obligated (Muñoz et al., 2013).

Malnutrition is considered an alteration in some of the stages of nutrition, which can be due to deficit or excess: The first leads to malnutrition and the second leads to overweight and later to obesity (Wafaa et al., 2017). In the present study it was evidenced that a percentage of the participants is in overweight and obesity grade I, these results are very similar to those found in Tezcana y Villa (2018) in which 43.9% of the workers were overweight and 19.4% presented obesity grade I Nutritional disorders can be derived from the diet carried by people in the Caribbean region, based mainly on flours, fats and sugars, which, accompanied by sedentary lifestyle, end up triggering nutritional changes such as overweight and obesity, which are considered as risk factors for the development of cardiovascular and musculoskeletal diseases in people who suffer from it (Yang et al., 2001).

Like obesity and sedentary lifestyle, the consumption of harmful substances such as tobacco and alcohol are one of the risk factors for cardiovascular diseases such as hypertension and acute myocardial infarction (Ivens et al., 1998) the vast majority of recyclers Study participants consume liquor and in a lesser proportion consume tobacco, these results are related to those obtained by Gavilanes and Alvarado (2017) where a significant proportion of the participants in their study reported smoking and consuming alcohol.

Work accidents are considered as any event that occurs unexpectedly and suddenly, causing bodily injuries, functional alterations or, in the worst case, the death of the worker, as a consequence of the person's work (Gomez y Suasnavas, 2015). In the study, 37.4% of the participating recyclers have had accidents, of which a significant part are of work origin, which is related to the obtained by Flores in Paraguay, where the incidence of occupational accidents in collectors was 37.5% (Parizeu, 2015). The presence of work accidents occurs as a consequence of the multiple risk factors to which recyclers are exposed, such as biological, physical, physical and safety, which can lead to the occurrence of accidents that put at risk the health and life of workers, hence the importance that these people are affiliated to the social security health regime, which allows to monitor the conditions to which workers are subject (Pradeep y Dhananjay, 2016).

Although the participants in the study state that they are in good health, due to the work they do, they are exposed to the presence of musculoskeletal symptoms such as lower back pain, in addition to the physical fatigue that arises from the work they do. In the present study, a large proportion of recyclers have presented low back pain, headache and physical fatigue during the last week. These results converge with those obtained by Morales et al. (2016) in Peru, in which pain, discomfort or discomfort in the lumbar region prevailed during the last seven days, this percentage being more significant in men than in women. Ballesteros, on the other hand, showed that the morbidity of waste pickers participating in their study was mainly represented by musculoskeletal complaints and respiratory diseases, as a consequence of the origin of work (Ballesteros et al., 2008). Contact with solid waste exposes workers to accidents such as animal bites, which can transmit diseases to the sufferer. The workers said that there is a presence of rodents in the work areas. Similar to that described by Ballesteros et al. (2008) in his study, where 62.5% of the population has contact with animals during their work, especially rodents.

Conclusions

According to the review of the bibliography, the results and their discussion can be concluded that: The recyclers of the city of Cartagena, are mostly men of productive age, who belong to the subsidized regime, and who have monthly income of a minimum wage, have had occupational accidents and are exposed to biological risks such as rodent bites. Although they state that they have a good state of health, the participants present nutritional alterations such as thinness and obesity, consume substances harmful to health and have musculoskeletal alterations. According to these results, it is necessary to implement an

intervention plan for recyclers where occupational health and health promotion and disease prevention activities are involved where healthy lifestyles are stimulated in order to improve health conditions and minimize accidents arising from work, which would positively influence their own well-being and that of their family.

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