



## SOLID WASTE MANAGEMENT ASSOCIATED WITH QUALITY OF LIFE

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### Abstract

The inadequate management of solid waste has an influence on the quality of life of people, so it is urgent to have an adequate management system, optimal for people to feel that they live in a healthy and clean environment and thus be able to prevent contagious diseases. This research is a review article on the influence of solid waste on the quality of life of people, how it can affect them in the economic aspect, health, customs, and habits of people's way of life. The methodology was non-experimental with a descriptive and explanatory qualitative approach, the data were obtained from the review of 220 articles in the open access databases of Scielo, Scopus, Ebsco, carrying out a systematic search. The sampling was non-probabilistic, with inclusion and exclusion criteria from a systematic review of articles found in the database of indexed journals of scientific rigor. It is concluded that four important factors are involved: citizen participation, environmental education program, participatory learning and opportunity of goods and services for solid waste management and its influence on the quality of life of people.

**Keywords:** Quality of life, solid waste management, service provision.

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## **1. Introduction**

This paper deals with one of the most important issues in the environmental aspect of solid waste management and its influence on the quality of life of people, since this is associated with the objective conditions of the environment in which people live and the perceptions they have about how these environmental conditions and their surroundings make it possible to live in a healthy, pleasant environment and external agents such as air, sea and soil pollution damage the health of human beings and therefore their quality of life. Nationally and internationally, there is growing concern about the deterioration of the environment, the decrease in the quality of human life and the degradation of the biophysical support for development. In this context, the non-delegable responsibility of the States to care for environmental conditions and resources is accentuated (Gamboa et al., 2016). One of the causes of solid waste generation is the population growth that leads to an increase in the production of solid waste in this regard Fernández (2005) refers that the higher the consumption, the higher the generation of solid waste, which leads to an increase in pollution and the depletion of natural resources; in this regard, Murillo et al, (2018) refers that population growth, economic development and consumption patterns derived from the improvement of the quality of life standards of the inhabitants in urban centers, have led to a sustained increase in MSW generation rates, i.e. it is linked to population dynamics in this regard Rodriguez (2002) states that garbage production is enhanced by the dynamics of consumption and production, as much as by demographic dynamics, being an unexpected effect of both, which turns solid waste into a by-product of population dynamics and development model.

For a better management in solid waste management, a waste recovery program is important in this regard Segura et al. (2020)

points out that the leadership in solid waste management in the world is marked by the ability to make recovery and consequently, obtain low percentages of waste disposal in landfills, European countries along with Japan show the best performance in this regard for this it is important that citizens participate in the classification of waste in this regard Torres et al, (2017) points out that knowing the point of view of the community is essential, since it is a fundamental actor in solid waste management, as it is the generator and starting point of the problem, It is responsible for separation at the source as the initial link in this chain, but this requires regulations that help to promote the relationship between the various institutions to achieve the same goal. Núñez (2016) points out that there is a diversity of associations in the management of urban solid waste between public, civil and business entities, but their regulations are poor, and they have little or no control over the type, quantity and destination of urban solid waste.

The quality of life is related to the enjoyment of a clean environment that serves for recreation and de-stress of each person in this regard André y Cerdá, (2015) points out that the environment has three fundamental economic functions: as a supplier of productive factors in the form of materials or energy, as a source of leisure and welfare services improving the quality of life, allowing the enjoyment of natural places, clean water and air, etc. In addition, an optimal management can bring economic benefits in this regard Galvis, (2016) points out that proper waste management contributes to the reduction of negative environmental impacts associated with each of the stages of its management and likewise, contributes to generate some economic benefits, also Fernandez, (2005) refers that with proper management can convert MSW into products with higher added value, using a considerable part of them as raw material, which in addition to contributing to mitigate the negative

environmental impacts, tends to provide positive economic and social contributions. However such task is difficult in this regard Betanzo-Quezada et al.,(2016) points out that municipal solid waste management is a complex task that has social, economic, technological and environmental implications for society and for local administrations likewise Cruz (2013) refers that the advance of technology in the last century has generated a very high environmental cost for society and nature, because the latter is reaching the limit of its capacity to regularly supply renewable resources and to absorb the waste resulting from society's consumption to carry this forward is difficult because the authorities.

### **General objective**

To analyze from a bibliometric approach, the characteristics in the volume of scientific production related to solid waste management associated with quality of life, registered in Scopus during the period 2018-2023 by Latin American institutions.

## **2. Materials and Methods**

This work was carried out because of a scientific literature review whose publication was related to solid waste management and quality of life, for which the prism method was used, which is a guide that helps for a better presentation of systematic review publications, generating transparent, complete, and accurate publications, managing to describe why the review was carried out. The perspective of the research is qualitative since it allows arguing about a problem on the review of international and national articles. The methodology was a structured bibliographic review with a qualitative approach of 220 articles from the Scielo, Scopus and Bost databases, carrying out a search from the prism method, taking as reference the last 5 years, which reduced the work area, then the search was delimited from the summaries and conclusions of each bibliography,

proceeding to identify which were potentially eligible, which resulted in a manageable number, and finally the bibliography to be worked on was defined from exclusion and inclusion criteria.

### **Exclusion criteria:**

- a) Bibliography older than 5 years.
- b) Bibliography that is not open access.
- c) Keywords that are not related to the basic terms used.
- d) That talk about solid waste management but do not relate to quality of life.
- e) Thesis, books, journals, opinion papers.

### **Inclusion criteria:**

- a) They should be in the Ebsco, Scopus and Web of Science databases.
- b) Scientific articles.
- c) They must be 5 years old, taking into account from 2018 to the present.
- d) Only articles from 2020-2022 were considered for the selection of bibliographies.
- e) The keywords of each journal should be related to the terms of the research.

According to the criteria used, it can be determined that there were two well-marked stages, the first is the selection of the bibliography from the database chosen from the year 2022, which resulted in a total of 220 publications considered eligible for the systematic review. The sampling was non-probabilistic, with inclusion and exclusion criteria based on a systematic review of articles found in the database of indexed journals of scientific rigor and an argumentative qualitative approach. The design was carried out through the prism method and from the inclusion and exclusion procedure, the selection of the articles with the highest categorical incidence was made, whose content includes name of the author or authors, year, title, source, DOI and references. From the inclusion and exclusion criteria for solid waste management and quality of life, twenty articles remained valid, which have direct incidence in the interpretation of the results and discussion, showing an

integral situation of solid waste management and its influence on people's quality of life.

### 3. Results

After reviewing the information found in the different bibliographic sources, the following results are presented:

TITLE-ABS-KEY ( \*solid AND waste AND management AND & AND quality AND of AND life\* ) AND ( EXCLUDE ( PUBYEAR , 1994 ) OR EXCLUDE ( PUBYEAR , 1998 ) OR EXCLUDE (

PUBYEAR , 2002 ) OR EXCLUDE ( PUBYEAR , 2003 ) OR EXCLUDE ( PUBYEAR , 2004 ) OR EXCLUDE ( PUBYEAR , 2007 ) OR EXCLUDE ( PUBYEAR , 2008 ) OR EXCLUDE ( PUBYEAR , 2009 ) OR EXCLUDE ( PUBYEAR , 2010 ) OR EXCLUDE ( PUBYEAR , 2011 ) OR EXCLUDE ( PUBYEAR , 2012 ) OR EXCLUDE ( PUBYEAR , 2013 ) OR EXCLUDE ( PUBYEAR , 2014 ) OR EXCLUDE ( PUBYEAR , 2015 ) OR EXCLUDE ( PUBYEAR , 2016 ) OR EXCLUDE ( PUBYEAR , 2017 ) )

TABLE 1

scenario 1	Environmental education program	50
scenario 2	Citizen participation	70
scenario 3	Participatory learning	40
scenario 4	Opportunity for goods and services	40

220

#### FIGURE 1

The table shows the percentage of each factor involved in the management of solid waste related to quality of life, i.e., the degree of participation of each parameter, with the highest participation of citizen

participation with 35%, followed by the environmental education program with 25% participation, participatory learning with 20%, and finally the opportunity of goods and services with 20% participation.

### Methodological design



Figure 1. Methodological design

Source: Own elaboration

#### Phase 1: Data collection

The data collection was executed from the Search tool on the Scopus web page, where publications were obtained from the choice of the following filters:

➤ TITLE-ABS-KEY ( quality AND of AND service, AND public AND hospitals ) AND ( LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020





Solid waste management was the key word used most frequently in the studies identified through the execution of Phase 1 of the Methodological Design proposed for the development of this article. Solid waste is also found among the variables. Solid waste management is used most frequently and is associated with the quality of life variable. From the above, attention is drawn to the health and environmental risks; poor solid waste management can also contribute to visual pollution and affect the aesthetics of an area. Areas with intense commercial activity or inadequate regulation and management of visual pollutants are particularly susceptible to the

negative impacts of solid waste. Proper waste management practices can create employment opportunities, promote recycling, and resource recovery, and contribute to the overall economic development of a community. In addition, implementing social stewardship programs in conjunction with solid waste management initiatives can address the social impacts generated by waste management activities. By ensuring effective and appropriate solid waste management, communities can improve their quality of life, promote sustainable development and work towards achieving the Sustainable Development Goals.

### Distribution of scientific production by year of publication

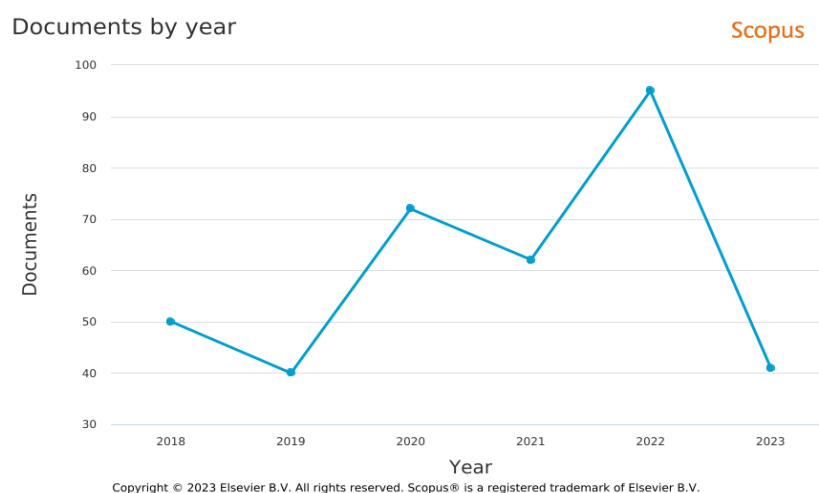


Figure 3 shows the distribution of scientific production by year of publication.

*Figure 3.* Distribution of scientific production by year of publication.

**Source:** Own elaboration (2023); based on data exported from Scopus.

Municipalities play a critical role in solid waste management within their jurisdictions. They have several responsibilities related to waste management, including the establishment and enforcement of waste management policies and regulations. Municipalities are responsible for ensuring that waste is collected, transported, and disposed of properly in a safe and environmentally sound manner (Vávrová et al., 2023). This includes implementing waste management programs and providing adequate

infrastructure and resources for waste management (Tsai, 2023). By assuming these responsibilities, municipalities contribute to the improvement of health, environment, and climate security within their communities (Igodo et al., 2023). One of the key responsibilities of municipalities in solid waste management is solid waste collection and transportation. Municipalities are responsible for organizing and managing waste collection services, ensuring that waste is collected from households, commercial

establishments, and public areas on a regular basis. They also oversee the transportation of waste from collection points to disposal sites or recycling facilities (Ulloa-Torrealba et al., 2023). Efficient and timely collection and transportation of solid waste are essential to prevent waste accumulation and associated negative impacts on public health and the environment (Greer et al., 2023). In addition to collection and transportation, municipalities also play a crucial role in implementing waste disposal and recycling initiatives. They are responsible for establishing and managing waste disposal facilities, such as landfills or incinerators, where non-recyclable waste can be

disposed of safely and efficiently. In addition, municipalities are increasingly focusing on promoting recycling and waste reduction initiatives. They implement recycling programs, educate the public about the importance of recycling, and provide recycling facilities and services (Greer et al., 2023). By prioritizing waste disposal and recycling initiatives, municipalities contribute to the reduction of waste sent to landfills, conservation of natural resources, and mitigation of environmental impacts associated with waste generation.

### Distribution of scientific production by country of origin.

Figure 4. shows how scientific production is distributed according to the nationality of the authors.

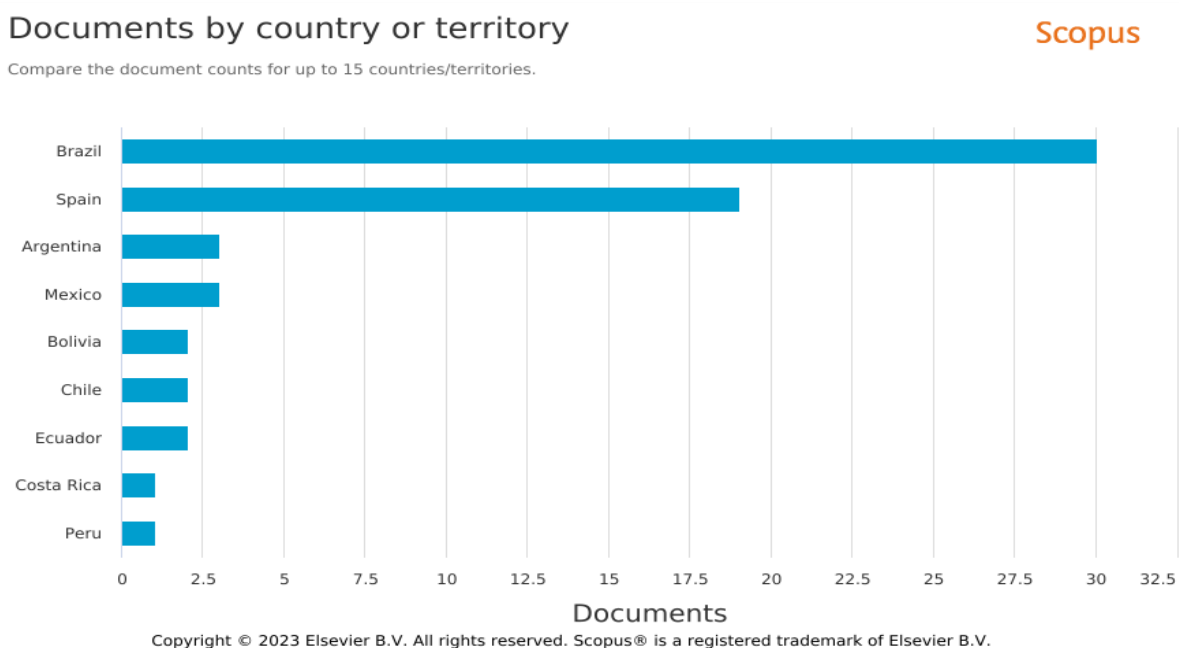


Figure 4. Distribution of scientific production by country of origin.

**Source:** Own elaboration (2023); based on data provided by Scopus.

The scientific output of solid waste management is influenced by a variety of factors, including socioeconomic factors. Socioeconomic factors, such as income levels, education and employment opportunities, play an important role in determining the quality of waste

management practices in a given area. A study conducted in the Villa Maria district of Peru found that inadequate integrated solid waste management was influenced by socioeconomic factors (Policastro and Cesaro, 2022). In addition, the size of the population and its socioeconomic characteristics have been identified as variables that impact the production of

household solid waste (Ardolino et al., 2023). Therefore, addressing socioeconomic factors is critical to improve the scientific output of solid waste management and ultimately improve the quality of life of a community.

Environmental factors also play a decisive role in shaping the scientific output of solid waste management. Environmental education has been identified as a factor influencing the achievement of sound waste management practices (Yang et al., 2023). In addition, the composition and characteristics of waste are influenced by numerous environmental factors (Tokarchuk et al., 2023). The United Nations Sustainable Development Goals (SDGs) highlight the importance of addressing environmental issues, including waste management, to ensure a sustainable future (Cobos-Mora et al., 2023). Therefore, considering and mitigating environmental factors is vital to promote effective and sustainable solid waste management practices. Technological

factors are another important aspect that influences the scientific production of solid waste management.

Technological advances have the potential to significantly improve waste management practices, from waste collection to treatment and disposal methods. For example, the use of innovative waste management technologies and systems can improve efficiency, reduce environmental impact, and promote resource recovery (Espinosa-Aquino et al., 2023). However, the disarticulation between environmental management of waste and environmentally harmful factors can hinder the advancement of scientific production in waste management (Igwegbe et al., 2022). Therefore, adopting and implementing appropriate technological solutions is essential to optimize solid waste management and contribute to a better quality of life.

### Distribution of scientific production by area of knowledge

Figure 5 shows the distribution of scientific publications by area of knowledge through which the different research methodologies are implemented.

#### Documents by type

Scopus

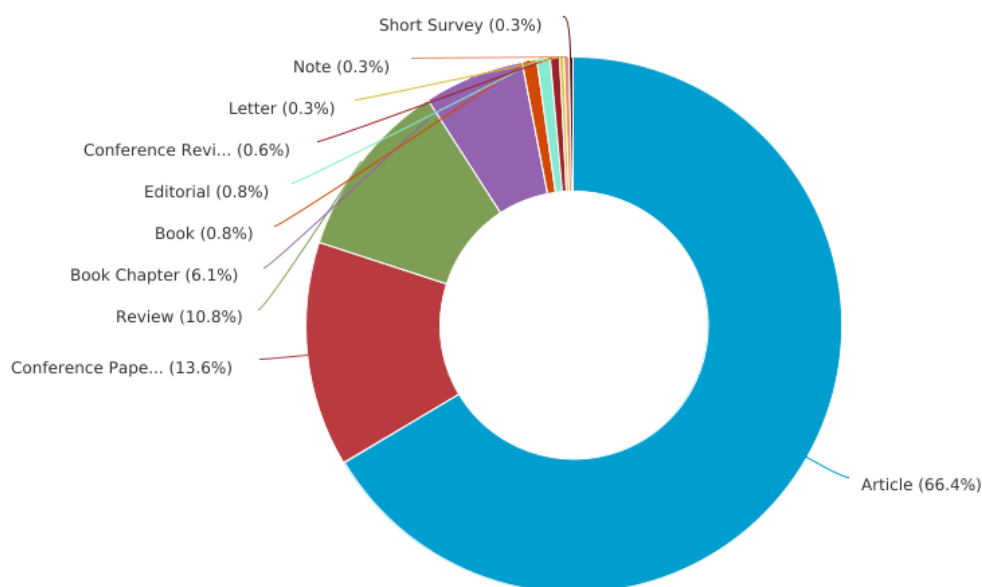


Figure 5. Distribution of scientific production by area of knowledge.



**Source:** Own elaboration (2023); based on data provided by Scopus.

The field of solid waste management has seen a significant amount of research and scientific output. Researchers and experts have recognized the importance of effective waste management to promote better health conditions and improve the quality of life (Yang et al., 2022). Solid waste management involves the integrated management of municipal solid waste, with the primary goal of sustainable development (M et al., 2023). This complex problem requires the collaboration of various sectors and disciplines to effectively address it (Ng et al., 2021). Through proper solid waste management, we can achieve improvements in health, environment, and climate security (Bracho and Martinez, 2020). Within the field of solid waste management, there are several areas of knowledge that researchers focus on. These knowledge areas help to understand different aspects of waste management and provide information on possible solutions. Some of the key knowledge areas within solid waste management include waste generation and characterization, waste collection and transportation, waste treatment and

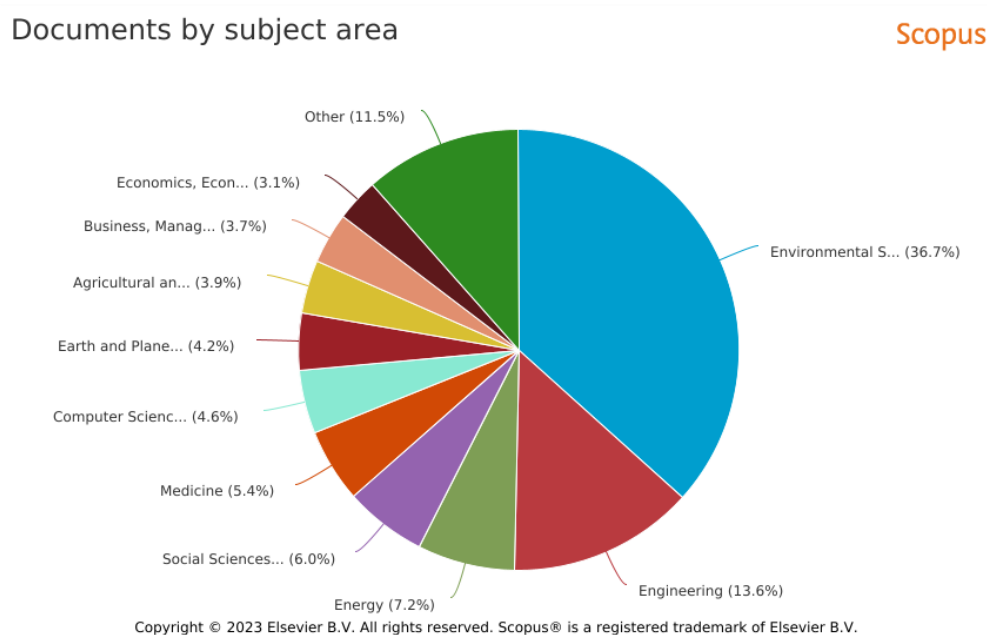
disposal, recycling and resource recovery, and policy and governance (Souza et al., 2023). Each of these areas plays a crucial role in the development of sustainable and effective waste management strategies.

The distribution of scientific production in the field of solid waste management shows certain trends and patterns. Research results are often concentrated in areas where waste management is a pressing problem or where there is a significant need for improvement. For example, in developing countries with rapidly growing urban populations, there is often a greater focus on waste collection and transportation, as well as waste treatment and disposal. On the other hand, in more developed countries, there may be a greater emphasis on recycling and resource recovery. Understanding these trends and patterns can help guide future research and inform decision-making processes in solid waste management.

### Type of publication

The following graph shows the distribution of the bibliographic findings according to the type of publication made by each of the authors found in Scopus.

Figure 6. Type of publication.



**Source:** *Own elaboration (2023); based on data provided by Scopus.*

Improper solid waste management has a significant environmental impact that can negatively affect the quality of life. Poor waste management practices often lead to soil, water and air pollution, posing risks to both human health and the ecosystem (Bracho and Martinez, 2020). Hazardous residues from solid waste, such as hazardous materials and chemicals, can have detrimental effects on the environment, including contamination of soil and water sources (Tokarchuk et al., 2023). This pollution can have long-term consequences for ecosystems and biodiversity, as well as for the overall quality of the environment in which people live. Therefore, proper solid waste management is essential to minimize the environmental impact and preserve the quality of the environment. In addition to the environmental impact, poor waste management also has significant health and sanitation issues. Improper waste disposal can lead to the spread of diseases through contamination of water sources and breeding of disease-carrying vectors, such as mosquitoes and rats (Espinosa-Aquino et al., 2023). Waste accumulation in residential areas can also generate unpleasant odors and attract pests, further compromising the health and well-being of communities. Therefore, effective waste management practices are essential to ensure proper sanitation and reduce the health risks associated with solid waste.

The social and economic consequences of poor waste management are also significant. Improper waste disposal can result in the degradation of neighborhoods and public spaces, which negatively impacts the aesthetics and livability of communities. This can lead to decreased property values and a decrease in the overall quality of life for residents. In addition, the financial burden of managing the consequences of poor waste management, such as cleaning up contaminated areas and treating related

health problems, falls on communities and local governments (M et al., 2023). Therefore, investing in adequate waste management infrastructure and systems is not only beneficial for the environment and public health, but also for the social and economic well-being of communities (Souza et al., 2023).

#### **4. Discussion**

The results of the literature review show that urban solid waste management is a complex task that has social, economic, technological, and environmental implications for society and for local administrations, making it a critical aspect of service provision to improve people's quality of life. From the graph it can be seen that citizen participation has a 35% participation rate; the community is the main actor that contributed to the design of the program focused on the separation of solid waste, this can be replicated to other rural communities that wish to start processes for the use of their waste so that in this way they can influence the quality of life of the people; a constant is the negative perception of the population regarding the integral management of solid waste; however, they all agree that it can be improved with education and awareness, as proposed by Oldenhage (2016).

From the graph the environmental education program found a 25% participation rate, that is, through proper education from a young age, solid waste management can be improved; thus, investing in education and research is necessary so that citizens can assume the responsibilities to make positive changes and thus improve the quality of life Guerrero et. al (2015). From the graph participatory learning shows 20% participation means a constant involvement of citizens in solid waste management for an improvement in the quality of life, it is an interactive and dynamic process that is also directly associated with the disposal chain, it must be a participatory plan, since

the problem of solid waste is associated with environmental issues, the economy and the community as a whole. Therefore, preparing a good education program in which the public participates is fundamental to improve management, since the recognition of the problem and its solution by the community itself is achieved (Rondón et al., 2016).

From the graph opportunity of goods and services with 20% participation is interpreted as the opportunity that people had to be able to sustain themselves and assume recycling as a source of life for the improvement of their economic situation starting with one person to later involve the whole family, in this sense, Sánchez (2016), considers that an ecological awareness and greater citizen participation should be promoted in the construction of strategies to reduce environmental problems, degradation levels, among others, in order to achieve true sustainable development.

Solid waste in the communities can become an opportunity for entrepreneurship for population groups such as women and young people, making innovation processes visible through the mobilization of community efforts and channeling governmental support. In this sense, the waste transformation process becomes a productive process, and an economic retribution can be achieved that inspires other communities to strengthen the preservation of rural ecosystems and to promote a resilient, respectful, and circular economy. Likewise, there is an urgent need for municipal and local government policies to improve solid waste management, form strategic alliances with private institutions and the community to have a better quality of life that will lead to living in a healthy environment, avoiding possible diseases.

## **5. Conclusions**

It is concluded that the most important factor is citizen participation in solid waste

management to improve people's quality of life. As long as there is more awareness about proper waste management, we will help other people to have a better quality of life because they will live in a healthy environment and also have the opportunity for sustainable development to improve their quality of life, It was determined that there is a positive, moderate and significant correlation between the management indicators and the integral management of solid waste, which shows that the problems are the result of the inefficient application of the environmental management indicators. Human capital needs to be identified, organized, trained, and its resources and levels of interaction valued so that actions have greater impact and visibility in improving the quality of life of the people, so the role played by the actors in the planning and management process, reduction in the consumption of resources, is important for changes in lifestyles, also the importance of participation and joint work between society, authorities and businessmen is crucial. Integral solid waste management involves not only treating, recycling and properly disposing of solid waste, it involves everyone and includes responsibility and commitment to reduce, implement clean technologies, eco-efficient processes, based on the sustainability of the development of society with the environment to improve people's quality of life.

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