Barreras en la gestión del conocimiento del manejo de RPBI

Knowledge management barriers in HBIW management

Barreiras no conhecimento RPBI gestão

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Resumen

El trabajo de investigación, tuvo por objeto la identificación y el análisis de las barreras en la gestión del conocimiento para el manejo de los Residuos peligrosos biológico infecciosos (RPBI), en los laboratorios Clínicos de la ciudad de Querétaro, se centró en la adquisición, uso y transmisión del conocimiento en el manejo de los residuos, de 26 microempresas del centro de la ciudad. La encuesta se aplicó a los administradores y al personal encargado de los RPBI. Las variables de investigación fueron: (i) barreras en la gestión del conocimiento, (ii) adquisición, uso y transferencia del conocimiento, (iii) característica empresarial y (iv) normatividad. En el instrumento utilizó la escala de Likert y su análisis a través del programa estadístico no paramétrico del SPSS, donde se obtuvo como resultado: la existencia de un gran número de barreras (organizacionales (30.7%), tecnológicas (24.2%), humanas (22.5%) y económicas (8.1%)), además de un incumplimiento normativo.

Palabras clave: Barreras en la Gestión del Conocimiento, Laboratorios Clínicos y manejo de residuos peligrosos biológico infecciosos.

Abstract

The research work, was designed for the identification and analysis of barriers in the knowledge management for the Hazardous Biological Infectious Waste Management (HBIW). The knowledge acquisition, use and transmission in waste management of 26 micro-enterprises from the city center was based in Querétaro City clinical laboratories. The survey was applied to managers and staff in charge of the HBIW. The variable of research were: (i) knowledge management barriers, (ii) acquisition, use and knowledge transfer, (iii) property business and (iv) regulations. where there was obtained as a result: the existence of a large number of barriers (organizational 30.7%, technological 24.2%, human 22.5% and economic 8.1%), as well as a regulatory breach.

Key words: Knowledge management barriers, Clinical laboratories and Hazardous Biological Infectious Waste management.

Resumo

O trabalho de pesquisa teve como objetivo a identificação e análise de barreiras na gestão do conhecimento para a gestão de resíduos perigosos biológica infecciosa (RPBI), em laboratórios de análises clínicas na cidade de Queretaro, focada na aquisição, usar e transmissão de conhecimentos na gestão de resíduos, 26 microempresas centro da cidade. A pesquisa foi aplicada aos gestores e pessoal responsável pela RPBI. variáveis da pesquisa foram: (i) barreiras na gestão do conhecimento, (ii) aquisição, uso e transferência de conhecimento, (iii) de negócios recurso e (iv) regulamentações. O instrumento utilizado a escala de Likert e análise através do programa estatístico SPSS não paramétrico, que foi obtida como resultado: a existência de um grande número de barreiras (organizacional (30,7%), tecnologia (24,2%), humano (22,5%) e financeiro (8,1%)), e uma falha de regulação.

Palavras-chave: Barreiras à gestão do conhecimento, Laboratórios Clínicos e de gestão de resíduos perigosos biológica infecciosas.

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Introduction

The knowledge management (KM) is a basic tool for business management, a process to identify, classify, project, present and use the knowledge and the organization business experience more efficiently, to improve the scope of the employee to achieve competitive advantages (Nieves Lahabal and León Santos, 2001). In addition, it is an administrative tool that allows you to attract, integrate, use and transfer different skills to the company (Grau, 2012). Managing knowledge is the basis of the Organization since it allows understanding the environment and acting in different scenarios of the globalized world, so that knowledge and information are considered at the same time a resource and a product within a company. The current information technologies, instruments and techniques development, had forced companies to engage in the KM (Durango Yepes, Quintero Muñós, and Ruiz Gonzáles, 2015) and optimum leverage acquired knowledge and transform them into new products, processes and areas of activity.

But, can the knowledge be managed in all companies? The answer is no. The knowledge management ends up being a way of creating conditions, facilitate flows of knowledge that can circular best within the Organization, but there are circumstances that prevent to fully develop knowledge within organizations due to the barriers that can be found within it. Is necessary to consider that mainly the knowledge is found in them people, the Organization and the processes, and that due to different circumstances is present obstacles that van to prevent its proper handling. Now well, from this perspective, What are the KM barriers that prevent a process as important as Hazardous Biological Infectious Waste (HBIW) handling in Querétaro city clinical laboratories is carried out without any problems?

That also rises the central question of this research: ¿do existing barriers in knowledge management in Querétaro city clinical laboratories, impede the proper handling of Hazardous Biological Infectious Waste? To respond to this question have been analyzed the knowledge management barriers of Querétaro city clinical laboratories (micro-enterprises), which involved the theory of knowledge and its barriers from different perspectives: economic, structural,

organizational and human, that they may be involved in the Hazardous Biological Infectious Waste (HBIW) management process.

Bibliographic information on the knowledge management in health enterprises, particularly in clinical laboratories that handled HBIW, is scarce; the only information localized refers exclusively to staff training or to the experimentation of new forms of acquisition and use of knowledge, enabling staff to develop competencies, and, of course, improve the forms of knowledge transfer, but the is no a way for the organizations to be able to manage their own knowledge.

The relevance of the research is justified in the documents of the United Nations, which in 2000 adopted the Millennium Declaration, which underlines the urgent need to respect and protect nature, and where it establishes that the countries have the obligation to introduce methods, techniques and/ or creating procedures (knowledge management) for the treatment, handling and waste disposal (UNIDI, Guide to Municipal Solid Waste Management, 2007). In addition, national legislation requires these companies to comply; however, the majority of laboratories at some point do not.

Problem Statement

At present, companies in the area of health are in the crosshairs of society and environmental groups due to environmental problems that are created when a suitable arrangement of the RPBI is not done. The generation of these wastes at the national level is 149,213 tons, of which contributes Queretaro 21690 (SEMARNAT, 2014). In the state not have any incinerator with the necessary capacity and only have a company that can treat 913 tons of waste by ex-situ technique (SEMARNAT, 2012). The remaining waste is sent to other states and to previously neutralized municipal landfills. There are some cases nationwide in which they have identified illegal dumpsites with this material, one of which occurred in 2011, when it hit an ecological reserve in Tamaulipas near Jaumave with more than a ton of RPBI lying next to the road. In 2014 other illegal dumping in Gomez Farias, Victoria, Madero and Altamira (Manzano, 2014) were identified. This happens throughout Mexico; for example, in Queretaro a clandestine dump was located in Cadereyta de Montes with waste from Social Security, private offices and clinical laboratories. The most serious problem is that the waste unneutralized, especially those from veterinary clinics and tattoos, are disposed of in landfills, but they have also located next to roads

and underground open air sites, which represent a source of contamination for the soil, air and nearby bodies of water, and a danger to the surrounding towns.

Barriers to Knowledge Management

The term "barrier to knowledge management" is understood as any limitation or restriction of organizational practices that prevent meaningful knowledge management in achieving goals and objectives of the organization. The more effective are the organizations in knowledge management, most likely to be innovative or to know what the limits of innovation (and Chris Argyris, 1996) are. Despite this, the challenge is to find ways to implement the GC in the company, as there are many barriers in the company that have to do with change management and the absence of a valid model to apply. Overcoming these barriers is not easy, because often depends on the company, whose size is an advantage especially for small businesses because it is in them where the structures are smaller and the owners have more control over their staff for change faster and cheaper.

There are several types of barriers: economic, organizational, technological and human; all of which can interfere with knowledge management of a company. Economic depend on investment capital, organizational depend on the business organization, technology depend on the economic capacity of the organization, and human depend on multiple and diverse factors of cultural, gender or identity (García-Tapia Arregui , 2002).

Figure I shows the indicators used to determine the existence of barriers to knowledge management company in managing RPBI efficiently.

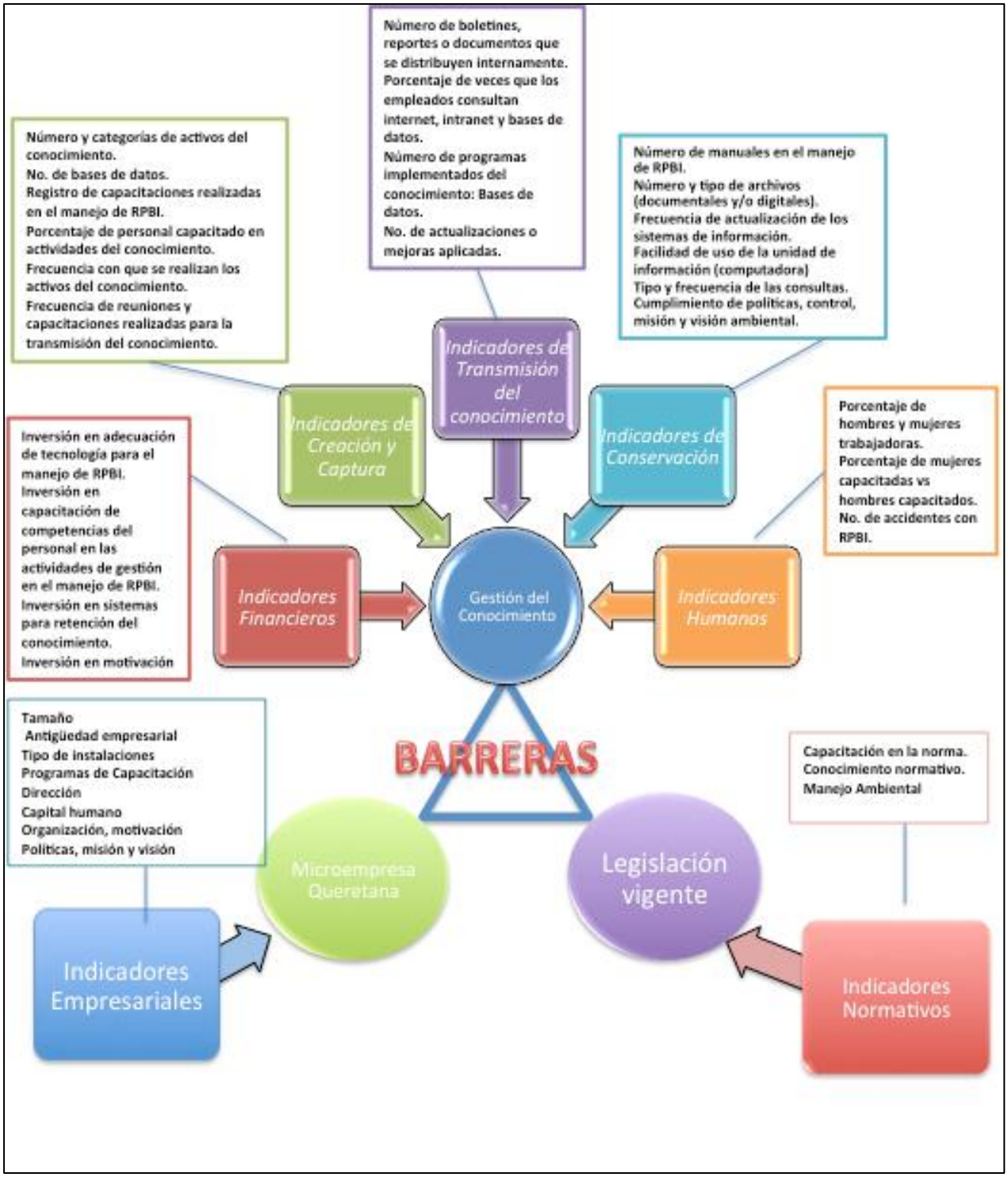


Figure 1. Indicators to determine the GC in handling RPBI. Source: Made by myself.

Regulatory monitoring in the management of infectious biological hazardous waste

Mexican Official Standards (NOM) are mandatory technical regulations issued by the Federal Public Administration, where rules, attributes, specifications, features of a process, system, activity or service are set. They are produced to protect the environment and ecosystems (SEMARNAT, 2015). NOM aimed at environmental protection, environmental health, biological-infectious hazardous waste classification and management specifications is the NOM-087-ECOL-SSA-1-2002, there are other standards that support the management of RPBI; each state has its rules.

Among the generators of these wastes are the, health clinics, veterinary, dental clinics, tattoo and piercing, research centers, hospitals and clinical laboratories. Those who produce more RPBI are hospitals.

RPBI management is a set of administrative and operational actions attached to the legal framework in this area to be met by generators and service providers to third parties, from generation to final disposal.

Methodology

Denotative study conducted on a sample of 26 laboratories from the center of the city of Queretaro followed the following criteria:

1. That their activities are not surrogates.
2. Laboratories are located in houses of the city center.
3. Workers are less than ten.
4. We already have some time to be working in the place.

The measuring instrument (survey) was based on Mejia and Cornejo (2010); each question was measured through an entire Likert scale of five points. a pilot group was then applied to obtain the scores of the group of each item; the scores were correlated with group-wide scale to significantly integrate (Hernandez S., 2010, p. 252). The result of the Alfa Cronbach test was 0.9074 and, therefore, the measuring instrument had a significant correlation and validity was adequate for the purpose of the study. Table I shows the indicators used for the evaluation of the barriers in knowledge management instrument.

Table 1. Development of the variables and indicators from the dimension of work, as the basis for the creation of the measuring instrument.

DIMENSIÓN	VARIABLE		INDICADORES
GESTIÓN DEL CONOCIMIENTO	BARRERAS EN LA GESTIÓN DEL CONOCIMIENTO	Barreras Económicas	Inversión en la adquisición externa del conocimiento
			Inversión en estructura del edificio
			Inversión tecnológica
		Barreras Organizacionales	Estilo directivo para crear conocimiento
			Adquisición, uso y transferencia del conocimiento
			Cultura organizacional
		Barreras Humanas	Cultura
			Género
		Barreras Tecnológicas	Mecanismos de soporte tecnológico
LEGISLACIÓN VIGENTE	Norma Oficial Mexicana en el manejo de RPBI		Capacitación
			Conocimiento normativo
			Ambiente
MICROEMPRESA QUERETANA	Características empresariales		Tamaño, antigüedad empresarial, tipo de instalaciones
			Programas de capacitación, dirección, capital humano.
			Organización, motivación Políticas, misión y visión.

Fuente: elaboración propia.

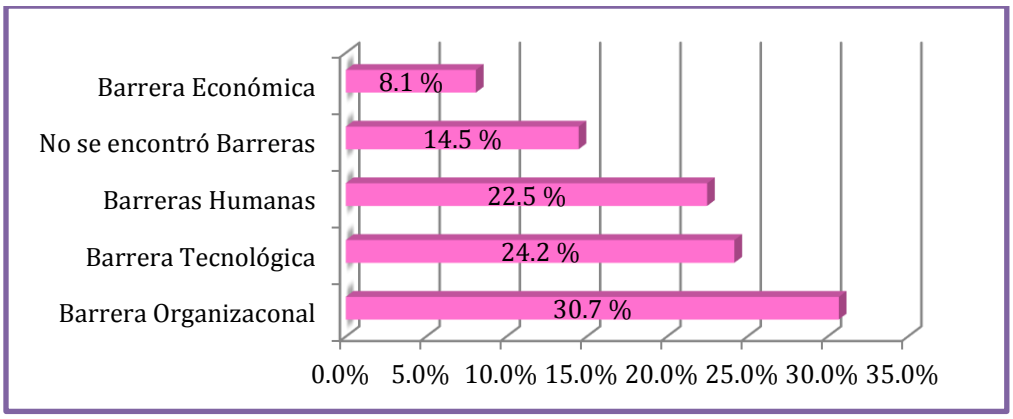
Results

After application survey frequency analysis and non-parametric tests (Chi-square, Kolmogorov-Smirnov test) was performed in addition to the Spearman's rank correlation coefficient to determine the type of barriers affecting the clinical laboratories of Queretaro, with the following results:

Ítems	Barreras identificadas
1. Realiza compras de bibliografía especializada en manejo de RPBI.	Económica
2. Capacita a su personal con expertos externos a la empresa en el manejo de RPBI.	Organizacional
3. Capacita a su personal con cursos internos sobre el manejo de RPBI.	Económica Organizacional
4. Desarrolla técnicas nuevas en el manejo de RPBI.	Tecnológica Humana (cultural)
5. Realiza reuniones de trabajo. Periodicidad.	Humana (cultural)
6. Posee documentación específica para el manejo de los RPBI.	Organizacional
7. Realiza consultas técnicas en el manejo de RPBI.	Tecnológica
8. Se comunica a través de medios electrónicos con su personal.	Tecnológica Organizacional
9. Elaboran manuales internos en el manejo de RPBI.	Organizacional
10. Comparten la documentación a través de la red.	Tecnológica Organizacional
11. Posee página web corporativa.	Tecnológica
12. Se motiva al personal a realizar acciones que apoyan el desarrollo de mejoras en el manejo de RPBI.	Humana (cultural)
13. Es fácil acceder a la alta dirección para opinar sobre una actividad o proceso.	No se encontró
14. Existe un ambiente laboral de franqueza y confianza en el personal de la empresa.	No se encontró
15. La alta dirección está consciente de la generación del conocimiento en el manejode RPBI.	Humana (cultural)
16. La alta dirección apoya la opinión del personal durante la realización de actividades.	Humana (cultural)
17. La alta dirección fomenta el desarrollo de iniciativas y la creatividad del personal.	Humana (cultural)
18. Existe apoyo para que el personal aplique el conocimiento adquirido.	No se encontró
19. Las opiniones o sugerencias del personal son tomadas en cuenta.	No se encontró
20. La experiencia que el personal obtiene en la empresa es valiosa para él.	No se encontró
21. La distribución de las instalaciones permite que las consultas técnicas entre los empleados se realice en forma eficiente.	Tecnológica Económica
22. La distancia física que separa un área organizativa de otra es corta.	No se encontró
23. Se propicia la elaboración de documentos de trabajo para documentar los proyectos realizados.	Organizacionales Humana (cultural)
24. Es común la realización de consultas electrónicas entre el personal de la empresa.	Tecnológicas Humana (cultural)
25. Se programan reuniones para discutir los proyectos de desarrollo entre el personal de la empresa.	Organizacionales Humana (cultural)
26. Se discuten experiencias y lecciones aprendidas entre el personal de la empresa.	Organizacionales Humana (cultural)

27. La alta dirección apoya la transferencia del conocimiento en la realización de proyectos.	No se encontró
28. La alta dirección apoya la programación de reuniones de trabajo donde se tranfiere conocimiento.	No se encontró
29. La alta dirección apoya el uso de correo electrónico para la transferencia de conocimiento.	Tecnológica
30. Se propicia el empleo de sistemas informativos en gestión del conocimiento en el manejo de RPBI.	Tecnológica Humana (cultural)
31. Se propicia el uso de fuentes de información compartidas que están depositadas en las bases de datos de las redes locales.	Tecnológicas
32. La disponibilidad de tiempo dificulta que el personal asimile e integre el conocimiento en la empresa.	Organizacionales
33. La disponibilidad de tiempo dificulta la elaboración de los manuales.	Organizacionales
34. La disponibilidad de tiempo dificulta el uso de los recursos de soporte informático (intranet, redes).	Tecnológico
35. El cambio del personal dificulta el desarrollo de proyectos.	Organizacionales
36. El emisor está dispuesto a transferir su conocimiento.	Humana (cultural)
37. El emisor entrena al personal receptor del conocimiento.	No se encontró
38. El emisor es confiable para el receptor.	No se encontró
39. El emisor está dispuesto a compartir sus conocimientos sobre las actividades que conoce.	Humana (cultural)
40. El receptor está dispuesto a compartir sus conocimientos sobre las actividades que conoce.	Humana (cultural)
41. Invierte en adecuación de tecnología para el manejo de RPBI	Económica
42. Invierte en capacitación del personal en actividades de manejo de RPBI.	Económica
43. Invierte en información bibliográfica y electrónica sobre el manejo de RPBI.	Económica
44. Posee bases de datos referentes al manejo de RPBI.	Tecnológica
45. Realiza registros de la capacitación en el manejo de RPBI.	Organizacional
46. Realiza reuniones para transmitir conocimientos sobre el manejo de RPBI.	Organizacional
47. Distribuye boletines, reportes o documentos sobre el manejo de RPBI.	Organizacional
48. Posee programas que implementan el conocimiento.	Organizacional
49.Aplica las políticas, control, misión y visión ambiental.	Organizacional
50. Se facilita el uso de las unidades de información (computadoras).	Tecnológicas
51.Se capacita el personal en el manejo de RPBI.	Organizacional
52. Se capacita al personal en el manejo de la Norma Oficial Mexicana de RPBI.	Organizacional
53.Cumple con la normativa estatal y la normativa municipal sobre el manejo de RPBI.	Organizacional

Figure 1 shows the percentage of barriers affecting variables. It can be seen that the barrier that most affects knowledge management is organizational barrier with 30.7%, followed by the technological barrier with 24.3%, human barriers with 22.5% and finally, the economic barrier with 8.1%. It is noteworthy that 14.45% of the items did not present any barrier. The study by S. Perez Leal S., Barceló V. and Leon D. (2013) mentions a similarity in the type of barriers affecting SMEs; the first barrier is the organizational as in the aforementioned case.



Graph 1. Percentage of type of barriers to knowledge management found in the analysis of clinical laboratories in the city of Queretaro.

In the general data of the laboratories, we found that 7% have managers, the rest (93%) control is exercised by the chemicals themselves, who usually own the company. Not all have technical and only 24% have mayors who usually are responsible for the RPBI. Another interesting factor is the age of the company: a senior waste less control. Generally they follow unsuitable for handling, and throw them into the drainage, urban garbage disposal in not confine not freeze and not hire companies that take over your disposal techniques. Table 3 shows the type of barriers in the GC when handling RPBI found.

Table 3. Barriers in the GC found in the general survey of the company.

Ítems	Tipo de Barrera
a. Laboratorios con y sin área especial para almacenar	Financiera Cultural
b. Laboratorios que cuentan con sistema de refrigeración para el almacenamiento de RPBI.	Financiera Tecnológica Cultural
c. Servicios de recolección	Organización Normativa
d. Inversión tecnológica	Financiera Cultural Tecnológica
e. Inversión en capacitación	Organizacionales Culturales
f. Inversión en motivación	Organizacional Cultural
g. Manejo de base de datos	Tecnológica Organizacional
h. Boletines informativos	Organizacional
i. Concepto ambiental	Organizacional Cultural

In hypothesis testing found that 53.2% of the items they accept the alternative hypothesis (Ha), indicating that the acquisition, use and transformation of knowledge in the management of RPBI depends on the barriers of knowledge management in laboratories clinical center of Queretaro and the remaining 44.8% accept the null hypothesis (Ho), which does not depend on the barriers of knowledge management. Most of the items that fall into this hypothesis is related to organizational systems and trends.

After taking into account this result we can see that tenure in clinical laboratories Queretaro is organizational. Botero (2007) says that when we subscribe knowledge in the company, based on the concept of Nonaka and Takeushi in the ontological dimension, knowledge has an order: individual, group, organization and finally the level inter -organizativo, it is indicating that if the individual does not acquire, use and transforms knowledge, this is not going to be able to transcend to higher levels for the benefit of the organization. Thus, thanks to the results of the work shows that companies to have many years of operation not want to leave their comfort and status do not seek to innovate or create new knowledge that allows them to improve their organizational part.

Conclusion

Knowledge management is an essential part within an organization. Beyond being a fad, it has managed to substantiate its importance in the value of the company and sustainable competitive advantage. For this reason, it is important to identify those barriers to greater benefits in the area of micro health. The study looked at 26 clinical laboratories in the center of the city of Queretaro, who met the conditions set previously.

Below are the most relevant conclusions of this study are presented:

1. It was found that health workers are exposed to occupational hazards, not only those responsible for the management of RPBI, but also chemists, technicians and administrators. The degree of pollution caused by mismanagement of waste can damage the population.
2. In general it was found that the studied laboratories have been working between 11 and 15 years. The volume of waste generated is less than 50 k; 4% has storage area and the rest does not invest in upgrading their facilities, not so much for financial reasons but for cultural issues because they do not believe it is necessary because of the volume they handle.
3. 75% do not invest in technology, training in waste management and does not handle databases; on the other hand, 46% do not have policies, environmental mission and vision.
4. There are barriers in the investment of bibliographic material. Two-thirds of laboratories wants to invest in training by external personnel; Some laboratories have the equipment and computer facilities but workers do not have access to them; there is a trend towards investment in new technology. The trend in this case can be referred to as "little interest" technological (cultural barrier).
5. In the aspect of human barriers are some cultural barriers are organizational and other staff. Almost 50% of laboratories not intended time employees for the use of the information medium, and most issuers are willing to transfer knowledge, however, there are some issuers that do not transmit knowledge in full because they want ensure their employment situation becoming indispensable and thus not lose their job. The number of men who work in laboratories is reduced, in most laboratories more women work.

6. Few laboratories communicate via electronic means. Most of the staff believes that these means are not necessary. A greater number of laboratories do not have databases and those that do not allow employees to use them.
7. With respect to the norm in the management of RPBI, a cultural barrier caused by the lack of interest in knowing an organizational barrier and lack of training in the management of the rules is identified. It was observed that 7.7% of clinical laboratories do not apply environmental policies.
8. An important parameter is the age of the company, which was measured using the Spearman's rank correlation coefficient. With it found that there is a negative correlation in the variables: investment in technological adaptation in handling RPBI, motivation, environmental policy concept, mission and vision, and number of female workers. A junior, these factors are increased; while the variable investment in training and number of male workers the correlation is positive: a senior there is a decrease in these factors.
9. This behavior in older clinical laboratories we can associate their resistance to change. Garcia Hill, Juarez Hernandez and Hernandez Zavala (2015) state that prefer to continue in their organizational comfort to make a change.
10. The directors of laboratories show limited interest in acquiring, using and transferring knowledge in the management of RPBI. Are available to purchase and use, but find it difficult to do or if they do not perform it in its entirety, Perez ZJ and Cortes RJ (2007) explain that there are many human barriers, so you must find a way eliminate them.
11. Most laboratories do not invest in technology systems for knowledge management and those who do not allow their employees to use them. There are few who allow access.
12. The acquisition, use and transfer of knowledge in handling RPBI in clinical laboratories in the city of Queretaro, depend first of organizational barriers, technological barriers after after human barriers and, finally, the economic barriers.

It is concluded that due to the type of micro health sector in question, is not familiar with knowledge management. Although some activities related to QA processes are performed, it is done without conscience or defined strategies to improve productivity. Finally, it is concluded that in the case of clinical laboratories in the city of Queretaro barriers do exist in the acquisition, use and transfer of knowledge in the management of RPBI.

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