



OPEN ACCESS

Social Appropriation of Knowledge and its contributions to the prevention of cutaneous leishmaniasis in rural contexts

Kathleen Agudelo Paipilla ,¹ Diana Maria Castro-Arroyave ,² Laura Guzmán Grajales ,¹ María Isabel Echavarría ³

¹Centro Internacional de Entrenamiento e Investigaciones Médicas, Cali, Colombia
²Universidad de Antioquia, Medellín, Colombia
³Universidad Icesi, Cali, Colombia

Correspondence to

Kathleen Agudelo Paipilla, SIHI LAC Hub, Centro Internacional de Entrenamiento e Investigaciones Médicas, Pance, 76026, Cali, Colombia; kagudelo@cideim.org.co

Accepted 9 May 2022



© Author(s) (or their employer(s)) 2022. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

To cite: Agudelo Paipilla K, Castro-Arroyave DM, Guzmán Grajales L, et al. *BMJ Innov* Epub ahead of print: [please include Day Month Year]. doi:10.1136/bmjinnov-2021-000899

BACKGROUND

Cutaneous leishmaniasis (CL) is a neglected infectious endemic disease that is transmitted through the bite of a vector insect (sandfly) of the *Lutzomyia* genus,^{1,2} typical of rural geographical territories,^{3,4} and causes disfiguring skin ulcers and disabilities. It is estimated that CL affects between 600 000 and 1 000 000 people a year around the world, mainly in the Americas, the Mediterranean basin, the Middle East and Central Asia. Eighteen of the 21 countries that make up the Latin American (LA) region are considered endemic areas for this neglected tropical disease. Colombia is one of the countries that reports the majority of global cases with 6161 in 2020 and has the second highest number of cases in the Americas, after Brazil.^{5,6}

This disease is associated with poor socioeconomic conditions,³ low coverage of access to basic sanitation services and difficulties in accessing health services. Despite the various efforts of public health systems and leishmaniasis surveillance and control programmes,⁷ the implemented strategies are still challenged with being timely, efficient and sustainable.⁸ Additionally, barriers caused by geographical conditions and sociocultural aspects such as unawareness about the subject persist.^{8,9} This scenario highlights the importance of proposing situated initiatives, based on the communities in favour of strengthening Social Appropriation of Knowledge (SAK) processes for the prevention and control of the disease.

The SAK as an alternative

The SAK is an LA proposal that has been conceptually and methodologically

configured from different disciplines and fields of action.^{10,11} This experience understands SAK as a transfer and dialogue of knowledge process between different sectors of society to bring new knowledge to the communities participating in the process to answer their local needs.¹²

In order to facilitate the approach to this proposal, we cite below two experiences that show how SAK is strengthening in the region to empower communities and promote their participation in processes for the generation of new knowledge and local development. The first experience evidences the development of spaces for dialogue, participation and education to promote the understanding and democratisation of scientific knowledge.¹³ The second experience focuses on a process of social innovation and SAK around the consolidation of agroecological family gardens to promote sustained production of food for self-consumption and other social benefits.¹⁴

The SAK is closely linked to social innovation in health (SIH); they can even be understood as complementary processes. SIH is defined as a 'novel solution (process, product, practice, market mechanism) developed in response to priority health needs within a geographical context and applied by different intersectoral organisations—solutions that enable more inclusive, affordable and effective healthcare'.¹⁵ Some of its main components are participation and community empowerment, therefore it is directly related to SAK processes. Both SIH and the SAK create spaces for dialogue, trust



Source: self elaboration. February, 2022

Figure 1 Rural communities involved in the project.

and collective construction that lead to processes of understanding, appropriation and empowerment. This allows for implemented solutions to be sustainable both for and from the communities themselves so that they can generate transformation in real contexts in favour of health and well-being.

This piece highlights fundamental aspects of the SAK and its importance in and relationship with social innovation/transformation in health based on an

experience of SAK in the context of CL in endemic areas in Colombia.

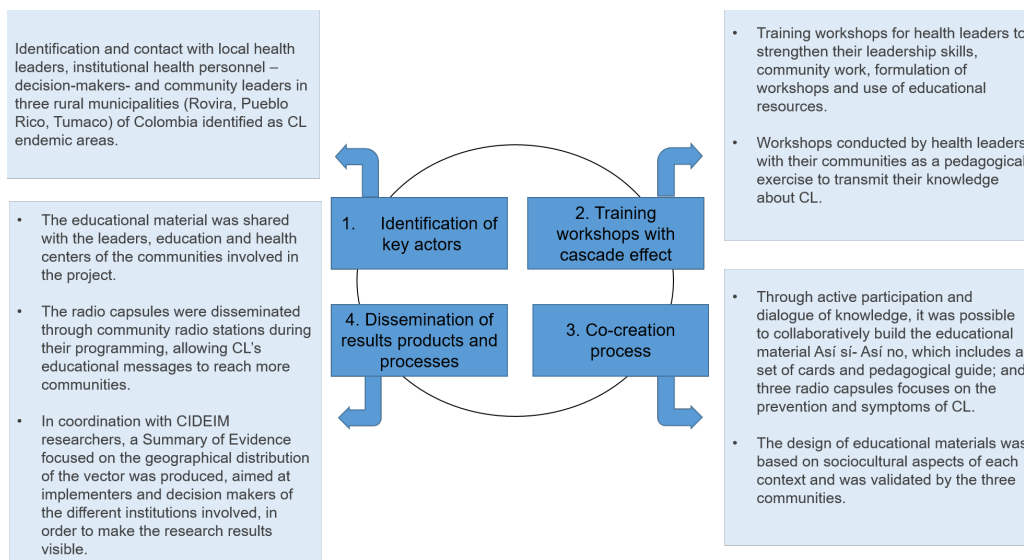
A SAK experience for the prevention, management and control of CL

Our experience was based on a bidirectional and horizontal process that convened rural communities from three municipalities in Colombia to engage in dialogue and exchange their knowledge and experiences with the scientific evidence generated on CL. Trustful, equal, and inclusive environments were promoted to transform their health conditions, motivate their empowerment, and generate community well-being.

In order to involve and empower communities affected by CL in the processes of disease control and prevention, the perspective of community-based participatory research was used.¹⁶ There were 32 participants from three Colombian municipalities considered endemic areas: Rovira (Tolima), Pueblo Rico (Risaralda) and Tumaco (Nariño) who were among local health leaders, health personnel from institutions, decision-makers and leaders of rural communities. They were invited to participate in an initiative involving collaborative construction of processes and SAK communication and educational products using a SIH perspective (see figure 1). When approaching the community, previous work that CIDEIM had developed over several years was integral in facilitating this process.

The methodological process was configured at four moments with specific objectives and articulated among the group through voluntary participation and collaborative work for the prevention of CL in the region (see figure 2).

The strategies proposed by the interdisciplinary team, made up of professionals from the social, health



Source: self elaboration. Sep 2021

Figure 2 Methodological process. CL, cutaneous leishmaniasis.

and communication sciences, aimed to combine knowledge and academic experiences with the know-how and daily practices of the communities to promote participation and empowerment around health. The cascade effect¹⁷ was key in this process to ensure that the training carried out with the participating leaders could reach other community groups, while strengthening leadership, participation and empowerment of leaders in communities and institutions.

Main challenges of the SAK process and its relationship with SIH

Key lessons related to the SAK and its importance in the search for social transformation in health are presented below.

The SAK as an approach to community work in health, a concept that is still emerging

To overcome previously identified healthcare service access barriers, it is necessary to think of alternative solutions that consider the communities affected by the health problem through applying the knowledge generated by the researchers to the context from which it was extracted. Our experience focuses on a SAK exercise, which from the perspective of Fernando Chaparro¹⁸ and other authors,^{10 12} is understood as a process of communication and intervention between different sectors to generate knowledge and motivate changes through participation, horizontal communication and dialogue of knowledge.

Despite recognition of the SAK's contributions and the advances in the formulation of public policy on the subject in Colombia, there is evidence of a lack of consensus on the conceptual and methodological production that serve as a reference. In some cases, there are variations on what this process is called, instead focusing on knowledge, science, technology or innovation. What does persist is the concept of 'appropriation' as its backbone. On the other hand, it is an emerging term that has been published for approximately 15 years, applied specifically in LA with the name of SAK.¹⁹ In this regard, Romero-Rodríguez *et al*²⁰ express that it arises from the socioeconomic characteristics of the countries in the region that reveal forms of social inequity, for which it is necessary to propose alternatives for local development. Therefore, it is clear there is an evidence gap of how SAK is applied to the health field.

Main challenges of the SAK process: theory versus practice

The SAK and its importance in LA have motivated the formulation of public policies, especially in non-industrialised countries that present gaps at the economic, political and social level.¹⁹ This progress, although encouraging because it inspires and institutionalises community involvement and empowerment in the development of various projects, also complicates

their development as fully participatory and horizontal processes.¹⁸

Our experience reflects this process in the case of Colombia. The Ministry of Science and Technology in Colombia, 'Minciencias', encourages the application of SAK through calls for proposals as part of the National Policy for the Promotion of Research and Innovation that include specific SAK components. For non-specific calls for proposals, they suggest it as a transversal component. The value that community participation and the 'return of knowledge' to citizens has in studies in a variety of areas such as health is striking. This openness allowed the SAK to be applied to a biomedical CL project. It aimed to estimate under-reporting and underascertainment of CL, as well as the effectiveness of the standard treatment for CL in three municipalities in Colombia using the mHealth-assisted active case detection.

In this project, the dialogue emerged from the academic circle and researchers in order to link communities and their leaders together to understand the study's findings within their contexts.

Although from a theoretical point of view it is argued that the participation of all sectors, including civil society, is one of the main components in the entire process, the institutional framework contradicts this by suggesting specific activities and deliverables as a condition for financing. In our experience, the above required turning to the context analysis^{21 22} that researchers had been carrying out in the three municipalities to maintain community-based planning. The participating leaders were connected to validate and qualify the initial planning in a timely manner, achieving active participation in the conception, development and use of educational products. They represented the main actors in the SAK process within their communities.

The difference in contexts of the three participating communities represented one of the greatest challenges throughout the experience. Despite the contribution of the context analysis that was incorporated as a reference, a key question for the process emerged: how can three different cultural contexts be expressed in order to build products and processes that preserve each of their separate identities?

From the beginning of the project, the idea was to generate two co-created products with the communities: a pedagogical kit containing a set of cards and manual to guide different educational strategies on elements that the communities need to know about the diagnosis, treatment and prevention of CL; and the planning of three radio segments about the prevention and symptoms of this disease to be broadcast on community stations and through social networks.

To accomplish this, independent work with each of the communities was carried out and their differential and similar factors were then analysed. One of the main findings was the importance of language in this type of participatory process,²³ which is why the inclusion of quotes from each community was decided on along

with the addition of strategically placed drawings and images that would allow a greater community–product connection.

One of the main elements was the inclusion of characters with certain physical characteristics and in environmental settings proposed by leaders in accordance with the communities. This attempted to generate balance and create scenes in which key aspects of Rovira, Pueblo Rico and Tumaco came together. This graphic component was also a fundamental factor because community literacy skills in Pueblo Rico are less developed than in the other areas. Therefore, the inclusion of sufficient text and images was vital to achieve a true understanding of the manual's content in the three communities.

As Pabón states, 'it is not enough just to inform, a higher level of understanding is necessary',¹² also under the premise that knowledge must be dynamic in order to facilitate comprehension.²⁴ This process of understanding is directly related to empowerment, a process that intends to provide communities with tools and knowledge, so that they are able to adapt to their context and come up with their own solutions on their own, be it production, habitat, health or exercise. This in turn results in sustainability, allowing for changes or new practices to be maintained over time,¹⁸ a concept that undoubtedly brings SAK and SIH closer together.

Empowerment and sustainability were important topics in this experience, since they are what allow appropriation to go beyond just acquiring information on CL to actually promoting prevention and incorporating self-care behaviours into daily lives. Pabón expresses that 'appropriation' implies 'doing what has been learned on their own, and recognizing the importance of the environment in said process'.¹²

From practice, it is valid to question whether it is possible to ensure that communities manage to understand, give new meaning to and appropriate this new knowledge in order to incorporate it into their daily lives. This experience was proposed as a health education exercise that emphasises the importance of context-based disease prevention practices. Therefore, educational processes that permeate community members' daily lives and decentralise the power and knowledge of researchers and project facilitators are necessary in the search for this knowledge. The SAK strategy proposed seeks to articulate different levels of community relations using a model or cascade effect, in which the community works hand in hand with the facilitators and public sector actors of the participating municipalities.

The SAK and its relationship with SIH

SIH is an emerging area that, thanks to the work of SIHI Global, reached LA in 2017. It is an approach that, like the SAK, is still positioning itself and building a conceptual and methodological platform.²⁵ Usually, this development occurs in response to local challenges and can be promoted by community members who are aware of

their own current opportunities and needs. This can also be based on by external figures who employ community involvement to generate solutions, like the 'Mamás del Río' case.²⁶

In both forms of development, one of the greatest challenges is related to linking with and articulating ideas to the communities. This aims to achieve a knowledge dialogue, understand their needs and contexts, establish trusting relationships to attain a collective construction of solutions and empower them, overall contributing to sustainability.

The SAK occurs at this point which can be understood as a complementary concept of the SIH processes. From its methodology to the creation of intersectoral links through horizontal communication, it supports and contributes to collectively creating and generating processes of empowerment, which are fundamental to achieve social transformation in health. In its process of returning the knowledge generated in health research to the communities and their leaders, the SAK can lead to evidence-based participatory processes in order for initiatives or solutions to specific health problems to be generated, as is the case for CL.

In conclusion, the SAK can contribute to the strengthening of communities in different contexts in low/middle-income countries. Knowledge uptake in communities allowed for their empowerment and participation based on the dialogue of knowledge and in coherence with their knowledge needs. In this experience, collaborative work with local health entities, leaders and researchers enhanced community engagement for social transformation in health, the ultimate goal of SIH. Community involvement in this project could optimise prevention, timely care and management of the disease in endemic areas.

Twitter Kathleen Agudelo Paipilla @KathleenAgudelo

Acknowledgements This article is based on the work developed by the Latin America and the Caribbean Hub for Social Innovation in Health (SIHI LAC), at CIDEIM. We appreciate and acknowledge the hard work and commitment of the communities that participated in this initiative, because thanks to their knowledge and active participation this project has been possible.

Contributors KAP and DMC-A conceived the original idea of the article. All authors contributed to the analysis and interpretation of data, participated in the writing of each version and approved the final version. DMC-A and MIE gave guidelines so that the writing was critical and responded to the type of article.

Funding Ministry of Science, Technology and Innovation of Colombia (MINCIENCIAS; 857 - 2019). The experience that is the subject of this manuscript is the product of a project funded by the Ministry of Science, Technology and Innovation —Minciencias— in Colombia within the framework of its call (850 of 2019) to strengthen Science, Technology and Innovation projects (CTel) in medical and health sciences with young talent and a regional impact. The initiative is connected to the Young Researchers Program that aims to train young, recently graduated professionals who are recognised as researchers of excellence to increase national capacity in this field. TDR, the Special Programme for Research and Training in Tropical Diseases, in the framework of the project Building Capacity and inter-institutional collaboration for research in social innovation in health the LAC region: strengthening the Hub and development of a sub-regional node in Central America. (PO: 202541748)

Disclaimer The authors alone are responsible for the views expressed in this article, and they do not necessarily represent the decisions or policies of PAHO or TDR. In any reproduction of this article there should not be any suggestion that PAHO or TDR endorse any specific organisation services or products.

Map disclaimer The depiction of boundaries on the map(s) in this article does not imply the expression of any opinion whatsoever on the part of BMJ (or any member of its group) concerning the legal status of any country, territory, jurisdiction or area or of its authorities. The map(s) are provided without any warranty of any kind, either express or implied.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval Ethical approval was previously obtained for the project in which this experience was framed.

Provenance and peer review Not commissioned; externally peer reviewed.

Author note The project was led by CIDEIM, a research center focused on infectious diseases of poverty and Social Innovation in Health (SIH). It linked two professionals in Social Communication and Journalism together to form an inter-disciplinary team committed to enhance pedagogical skills, knowledge management and Social Appropriation of Knowledge (SAK) around cutaneous leishmaniasis (CL) while working together with community health leaders from three rural municipalities of Colombia: Rovira, Pueblo Rico and Tumaco. The entire process involved collaborative work and co-creation with leaders and health personnel from the Health Service Provider Institutions in the context of the communities, subsequently achieving a cascade effect in the transmission of new knowledge about CL to families and specific groups of the participating communities.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iDs

Kathleen Agudelo Paipilla <http://orcid.org/0000-0002-2274-9229>

Diana Maria Castro-Arroyave <http://orcid.org/0000-0001-7322-5970>

Laura Guzmán Grajales <http://orcid.org/0000-0003-0387-6481>

María Isabel Echavarría <http://orcid.org/0000-0002-9007-3507>

REFERENCES

- Pan American Health Organization. Leishmaniasis, 2021. Available: <https://www.paho.org/en/topics/leishmaniasis>
- Velez ID, Hendrickx E, Robledo SM, *et al*. Leishmaniasis cutánea en Colombia Y género. *Cadernos de Saúde Pública* 2001;17:171–80 <https://www.scielo.br/j/csp/a/4vKfrDPjnQC6nhK6VPR88nR/?format=pdf&lang=es>
- Maia-Elkhoury ANS, Magalhães Lima D, Salomón OD. Interacción entre Los determinantes medioambientales Y socioeconómicos para El riesgo para leishmaniasis cutánea en América Latina. *Revis Panam de Salud Públ* 2021;45:e49.
- Agudelo Chivatá NJ. *Informe de Evento leishmaniasis Cutánea, Periodo Epidemiológico XIII*. Colombia: Instituto Nacional de Salud, Bogotá, 2019. https://www.ins.gov.co/buscador-eventos/Informesdeevento/LEISHMANIASIS_2018.pdf
- Pan American Health Organization. Leishmaniasis epidemiological report of the Americas, December 2021, 2021. Available: <https://iris.paho.org/handle/10665.2/55368>
- Pan American Health Organization. *Interactive atlas of leishmaniasis in the Americas: clinical aspects and differential diagnosis*. Washington D C: Pan American Health Organization, 2020.
- Pan American Health Organization. Leishmaniasis epidemiological report of the Americas, December 2020, 2020. Available: <https://iris.paho.org/handle/10665.2/53090>
- Mendizábal-Cabrera R, Pérez I, Becerril Montekio V, *et al*. Cutaneous leishmaniasis control in Alta Verapaz (Northern Guatemala): evaluating current efforts through stakeholders' experiences. *Infect Dis Poverty* 2021;10:61.
- Patiño-Londoño SY, Salazar LM, Tovar Acero C, *et al*. Aspectos socioepidemiológicos Y culturales de la leishmaniasis cutánea: concepciones, actitudes Y prácticas en las poblaciones de Tierralta Y Valencia, (Córdoba, Colombia). *Salud Colect* 2017;13:123–38.
- Dávila-Rodríguez LP. Apropiación social del conocimiento científico Y tecnológico. un legado de sentidos. *Trilogía Ciencia Tecnología Sociedad* 2020;12:127–47.
- Mejía-Saldarriaga D, Londoño-Rivera AM, Quintero-Quintero PA. Apropiación social de la ciencia Y La tecnología en Medellín: contribuciones al debate sobre SU evaluación. *Trilogía Ciencia Tecnología Sociedad* 2021;13:163–91.
- Pabón R. Apropiación social del conocimiento: Una aproximación teórica Y perspectivas para Colombia. *Educación Y Humanismo* 2017;20:116–39.
- Lizarazo JE, García DIC. Apropiación social del Conocimiento en Salud en Santander: Una experiencia de comunicación, movilización social Y educación. *Rev del Observa de Salud Públ de Santa* 2014;9. Available: https://www.researchgate.net/publication/343995048_expe_comu_revista_apro_soci_num_2_2014_2
- Palacios L, Maca L, Arboleda G. Co-creando para El desarrollo de Una solución de innovación social rural: caso de Popayán en Colombia, 2021. Available: https://www.researchgate.net/publication/356839528_Co-creando_para_el_desarrollo_de_una_solucion_de_innovacion_social_rural_caso_de_Popayan_en_Colombia
- Van Niekerk L, Chater R, Naydenova E. *Social innovation in health: case studies and lessons learned from low- and middle-income countries*. Geneva: World Health Organization, 2017: 11. <https://www.who.int/tdr/publications/year/2017/social-innovation-in-health/en/>
- Wallerstein N, Duran B, Goetzl J. *Community-based participatory research for health: advancing social and health equity*. 3rd ed, 2017: 480. ISBN: 978-1-119-25885-8.
- Cuéllar GR. La Reforma integral de la Educación Básica en México (RIEB) en La educación primaria: desafíos para La formación docente. *REFIP* 2012;15:51–60 <https://www.redalyc.org/articulo.oa?id=217024398004>
- Chaparro F. Conocimiento, aprendizaje Y capital social como motor de desarrollo. *Ciência da Informação* 2001;30:19–31.
- Neuman MI. Construcción de la categoría “Apropiación Social”. *Quorum Académico* 2008;5:671690–87582 <https://www.redalyc.org/articulo.oa?id=199016835004>
- Romero-Rodríguez J-M, Ramírez-Montoya M-S, Aznar-Díaz I, *et al*. Social appropriation of knowledge as a key factor for local development and open innovation: a systematic review. *JOItmC* 2020;6:44–13.
- Polidano K, Parton L, Agampodi SB, *et al*. Community engagement in cutaneous leishmaniasis research in Brazil, Ethiopia, and Sri Lanka: a Decolonial approach for global health. *Front Public Health* 2022;10:823844.
- Ciencia Mde, Innovación TE. ¿Qué ES La Apropiación social de la Ciencia La Tecnología Y La Innovación? 2020. Available:

- <https://minciencias.gov.co/cultura-en-ctei/apropiacion-social/definicion>
- 23 Fals Borda O. La investigación acción en convergencias disciplinarias. *Revista Paca* 2009;1:7–21.
 - 24 Estévez Lizarazo J, Delgado Chinchilla DM, Hormiga Sánchez CM. Apropiación social del conocimiento en salud en Santander, 2018. Available: <https://repository.upb.edu.co/bitstream/handle/20.500.11912/4212/apropiacion%20social%20del%20conocimiento%20en%20salud%20en%20santander.pdf?sequence=1&isAllowed=y>
 - 25 Castro-Arroyave DM, Duque-Paz LF. Documentary research on social innovation in health in Latin America. *Infect Dis Poverty* 2020;9:41.
 - 26 Moscibrodzki P, Li J, Peeling RW, *et al.* Social innovation in health: a critical but overlooked component of the COVID-19 pandemic response. *BMJ Innov* 2021;7:523–5 <https://innovations.bmj.com/content/7/3/523>