

We know One Health, but we also need One Communication

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Abstract

The One Health concept was developed globally as a strategy to expand interdisciplinary collaborations in all aspects of human, animal, and environmental health. Although health communication is a well-recognized discipline in human health, it is not yet being applied in the context of One Health. This is a potentially wasted opportunity for building bridges between health (human, animal, and environmental) and social sciences, addressing cross-cutting issues in the holistic perspective required in the 21st century, keeping in mind that one solution does not fit all societies. One Communication allows communication to be made in several ways, using different channels and reaching different contexts and populations. In this chapter, the authors highlight some opportunities for One Communication in the context of food safety, zoonoses, and environmental health as well as the barriers perceived by them to the implementation of One Communication, taking into account the state-of-the-art and their own experience in recent projects and case studies.

Keywords: Food Safety, Sustainability, One Health, One Communication, Zoonoses

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1 Introduction

This chapter is structured as follows: introduction (1), review of concepts and state-of-the-art concerning One Health and Sustainable Development Goals (2), state-of-art, needs and gaps about Communication in One Health (3), the authors' own experiences and case studies that confirm the need of One Communication (4) in three different perspectives, food safety – the case of listeriosis (4.1), zoonoses – the case of hydatidosis (4.2) and environmental health – the case of vector-borne zoonoses and finally conclusions (5).

The state-of-art has been made using PubMed to search for articles with keywords like “One Health”, “Sustainable Development Goals”, “Zoonosis” and “Health Communication”. The cases presented and discussed were developed by the authors in the last ten years. The aim of the authors is to highlight some opportunities for One Communication in the context of food safety, zoonoses, and environmental health as well as the barriers perceived by them to the implementation of One Communication, taking into account the state-of-the-art and their own experience in recent projects and case studies.

2 One Health and Sustainable Development Goals

In the middle of the SARS-CoV2 pandemic, never in the 21st century has it been so relevant to talk about the importance of One Health, although its role has grown substantially in the last decade. That is evident when we look at the World Health Organization (WHO) disease outbreaks reported in the last two years, where the Middle East respiratory syndrome (MERS), Influenza virus (H5N1, H5N8, H3N2, H1N2), Rift Valley fever, Ebola virus, Dengue, and Yellow fever are constantly cited (WHO 2021). Humboldt-Dachroeden et al. (2020) noted that after 2016 the annual scientific production concerning One Health issues had increased notably in the aftermath of Ebola and Zika outbreaks, and hopefully, it also highlights the importance of the concept and the inevitability of One Health.

Recent global health initiatives of several organizations (WHO, World Organization for Animal Health [OIE], Global Health Security Agenda, among others) leverage this concept as well as the recent emergencies at the human-animal-environment interface (Behravesch 2019), triggered mainly by well-known phenomena such as the climate crisis, globalisation, urbanisation, deforestation, and intensification of agriculture. Yet, in 2018, the memorandum of understanding between the United Nations Food and Agriculture Organization (FAO), the OIE and the WHO described the rationale of the One Health approach as also achieving the Sustainable Development Goals (SDGs) (FAO, OIE, WHO 2018).

There are several concepts of One Health (AVMA [American Veterinary Medicine Association] 2021; CDC [Centers for Disease Control and Prevention] 2018; OHI [One Health Initiative] 2021; OIE 2021) designed in the specific context of each one of the organizations that has defined this concept. The definition adopted in this chapter is the one put forward by the One Health Commission (OHC) (OHC 2021): “*One Health is a collaborative, multisectoral and trans-disciplinary approach – working at local, regional, national and global levels – to achieve optimal health and well-being outcomes recognizing the interconnections between people, animals, plants and their shared environment*”. The most important threats to be faced are zoonotic diseases, emerging infectious diseases, antimicrobial resistance, food safety, wildlife diseases, and social issues that also affect health, mostly poverty (Behravesch 2019). This fits into the SDGs,

which include social development, the environment and economic improvement and are, therefore, intrinsically linked to One Health – “healthy people living on a habitable planet”. Thus, in both One Health and SDGs, the value of biodiversity and the sustainability of the planet ecosystems are taken into account for the survival of all living beings (Sleeman et al. 2019). In fact, the SDGs movements highlight the need to address the emerging threats in a multidisciplinary approach (Chatterjee et al. 2016).

It is important to ensure the existence of food, water, and a clean environment to achieve the desired global health (Gostin and Friedman 2015). The protein of animal sources like meat, dairy, eggs, and honey are important to feed the world (Behravesh 2019), but infectious diseases and mainly zoonoses represent critical threats to global health security (Salyer et al. 2017). In 2001, a highly cited publication (Taylor et al. 2001) estimated that 60% of all human pathogens are zoonotic and 75% of the emerging human infectious diseases are of animal origin. However, this is not such a new issue (Errecaborde et al. 2019). One Health is an approach that has been important for centuries (Behravesh 2019). Modern phylogenetic studies suggest the presence of rabies prior to the 15th century (Kuzmina et al. 2013). Moreover, some of the most important zoonoses around the world are also some of the oldest known to humans, like anthrax, brucellosis, echinococcosis, or leptospirosis (Salyer et al. 2017). Many of these diseases are neglected, however, they are also unpredictable and oftentimes underestimated. Most of them are also linked to poverty, as more impoverished communities usually face disease, low economic income, and loss of livelihood with environmental, animal, and human health consequences. The low- and middle-income countries, where poverty and disease have a symbiotic relationship, are the most affected by infectious diseases (Kakkar et al. 2019). Due to unplanned and unsustainable urban development in countries from the developing world, it is expected that these populations will be the most affected by the global burden of disease (WHO 2003). The correlation between the high burden of zoonotic diseases and poverty, especially when livestock is the most important source of income in a household, is strong (McDermott and Grace 2012). This link between poverty and emerging infectious diseases has also been evidenced by the 2014 outbreak of Ebola in Sierra Leone, which has one of the weakest health systems in the world (Shoman et al. 2017).

If we take into consideration that in 2020 only 68% and 39% of the world's population, respectively, had access to basic sanitation and safely managed sanitation (World Bank 2020), it becomes clear how a considerable part of the population is susceptible to disease. Kakkar et al. (2019) highlighted in their review with the same title, “the opportunities for One Health policies to reduce poverty” and this is due to be read. One Health goes beyond the biomedical approach and takes into account the eco-epidemiological as well as social, political and economic determinants (Kelly et al. 2017), and that is why it also provides a better understanding of solutions that fit locally, are feasible and realistic. With a One Health approach, the drivers of poverty in the human-animal-environmental interface would be better understood, thus enabling the development of targeted solutions to mitigate poverty (Kakkar et al. 2019). One Health synergies could be considered as ‘shared responsibilities’ in supporting global health security and the SDGs (Sinclair 2019), looking at SDGs not only as a vision but also as an inspiration for collaboration (Münter and Bojesen 2019).

3 Communication in One Health – needs and gaps

The sustainability of the One Health approach is achieved with good coordination, collaboration and communication across the sectors involved (Behravesch 2019; Kakkar et al. 2019; Sinclair 2019).

Coordination is essential for policy-making, strategic planning, resource allocation and the alignment across the different technical levels involved in One Health. Perhaps the biggest challenge is the political one. The political decisions concerning resource allocation for disease control priorities are influenced by economic arguments and evidence (Sinclair 2019). Nonetheless, Chatterjee et al. (2016) highlight a weakness: the unavailability of metrics to assess the impact of One Health policies in the field. Decision-makers need country-level data on One Health's impact to justify policy decisions and resource allocations (Sinclair 2019). Research published on multi-sectoral collaboration in health events rarely identifies the outcomes of the collaborative process (Errecaborde et al. 2019). Here lies an opportunity for academics to engage more with policy-makers in the context of One Health (Humboldt-Dachroeden et al. 2020).

There needs to be political will to support the robust engagement and sustainability of One Health as well as the SDGs (Behravesch 2019). But to achieve this, clarity and transparency are critical, because even if there are long-term improvements, implementation measures require a huge investment, coordination and collaboration among cross-cutting programmes and working groups (Sinclair 2019), which may be very challenging. Countries are not yet committed to providing the resources (structural, technical, human and others) needed as well as funding (Gostin and Friedman 2015). The United Nations have released an action plan to invest in the SDGs, expecting the private sector to help with funding (United Nations [UN] 2014), but Gostin and Friedman (2015) have made it clear that market incentives for private investment in global public goods are not common. To achieve global public goods, collective action is required. So, we face a clear lack of resources (Kakkar et al. 2019). With insufficient resources, it is too challenging to formalize multi-sectoral collaboration.

Indeed, there is a need to formalize collaboration and clearly outline the roles and responsibilities of all relevant sectors (Behravesch 2019). This is in line with Müntera and Bojesen (2019): One Health should not be only a concept for intellectual reflection, but instead needs to be formalized and co-created. This would allow mitigating the constraints in improving data sharing and channels for the exchange of information (Kakkar et al. 2019), namely between Ministries, which would improve surveillance and outbreak response capacity (Salyer et al. 2017). The One Health approach implies explicit collaboration (Errecaborde et al. 2019) and formal collaboration should foresee the creation of zoonotic-disease-specific working groups, improving the communication with the community and in turn reinforcing the One Health approach (Salyer et al. 2017). For this purpose, professional training programmes should be developed and implemented (Behravesch 2019).

One Health issues raise social, economic, ethical and legal issues that call for a holistic approach and systematic collaboration (Kakkar et al. 2019). There are several factors that support successful collaboration across three levels: individual, organizational and network factors. Global health requires multidisciplinary collaborative efforts (Errecaborde et al. 2019). However, historically studies have looked at human *or* animal disease, but not both (Chatterjee et al. 2016). An integrated study with humans and animals can decrease the time needed to obtain a correct diagnosis of zoonotic diseases, as in many cases, disease in animals precedes human infections (Kakkar et al. 2019). This was illustrated by Ebola (Rouquet et al. 2005), Rift Valley fever (Munyua et al. 2010)

and the West Nile Virus (Eidson et al. 2005). The identification of animal cases of infection can be used to grow awareness, facilitate early diagnosis and prevent a zoonotic disease, saving lives and economic and social damage (Kakkar et al. 2019). In addition to saving more (animal and human) lives, an integrated approach reduces costs (Zinsstag et al. 2018). Enserink (2010) has stated that a human outbreak of Q-fever in The Netherlands could have been prevented if the veterinary and public health authorities had communicated with each other. This example highlights the need for real collaboration and communication across the human, animal and environmental health sectors (Sinclair 2019). The challenge is changing the mindset of healthcare providers since many lack awareness of the One Health concept (Kakkar et al. 2019). In any case, it is not just health professionals who need to shift the paradigm from biomedical and human health to a more holistic and integrated, multisectoral One Health approach (Kandel et al. 2017). Institutionalising One Health coordination, linking surveillance systems, sharing laboratory resources, including all the needed disciplines in epidemiology studies and conducting joint risk assessments (Sinclair 2019) may be a shift that will only take place throughout several generations.

Historically, One Health failed to include environmental health and wildlife stakeholders (Lebov et al. 2017; Khan et al. 2018; Sleeman et al. 2019; Humboldt-Dachroeden et al. 2020), but these are being seen as of increased importance and recognition partners and key players (Musoke et al. 2016; Behravesh 2019). Climate change leads to landscape changes and consequent modifications in vector, reservoir and pathogen lifecycles (Semenza and Suk 2017), so there is a need to look at health in social-ecological systems. Climate changes affect a large number of sectors, most obviously the natural environment and diseases (Zingsstag et al. 2018), but may also lead to an increase in social conflicts (Herrero et al. 2016). Moreover, natural disasters are more and more frequent and often lead people to have to leave their homes. Owners have to abandon their companion animals and livestock, thus affecting the owners' mental health and the animals' welfare. Solutions must be foreseen and these complex problems must be seen through a One Health approach (Behravesh 2019), as beyond medical support, there is a need for psychological and social support. This brings us to another neglected sector when a holistic approach is sought: the social and human sciences. The way people and animals live with each other is shaped by social norms, economic imperatives and human values (Kakkar et al. 2019), so a one-size-fits-all approach does not work in every country/region (Behravesh 2019). For instance, antimicrobial resistance is a massive issue in developed countries, but antibiotics have saved and save millions of human and animal lives since they were first developed and are still essential in many parts of the world, namely the poorest (Behravesh 2019), so recommendations in this regard cannot be transversal and independent of the socio-economic circumstances and context of each country. In many communities, minor health problems in livestock strongly affect human food security and malnutrition (FAO 2011).

This also applies to health communication that should be more humanistic and give value to individual autonomy, since universally accepted best health practices do not exist (Werder 2019). Nonetheless, while medical/natural scientists often seem unaware of the need to collaborate with human/social scientists actively, the opposite also occurs. A bibliometric analysis performed by Humboldt-Dachroeden et al. (2020) found that One Health research is not present at all in monodisciplinary sciences like anthropological and political sciences, global governance, or public administration. Social and political science contributions can contribute to One Health institutionalisation, and combining quantitative and qualitative research with the aim of investigating in One Health is crucial. Thus, it is suggested that One Health initiatives should integrate mixed methods instead

of only quantitative research due to the complexity of the issues at hand (Degeling et al. 2020). An important finding in this regard relates to homophily, which occurs when individuals work in teams with other individuals similar to them (McPherson et al. 2001). Humboldt-Dachroeden et al. (2020) verified that there is an evident homophily among authors who published on One Health, even though homophily is in clear tension with the concept and transdisciplinary nature of One Health.

From the perspective of risk communication, there is also the urgent need to incorporate professionals from human, social and communication sciences. Risk is seen as being interrelated with the sociocultural context (Smith 2006), so risk management and communication have to include not just the threat itself but also how people perceive and respond to it (Abrams and Greenhawt 2020). Risk communication needs to explain the risk, reach the target group and lead to behavior change (Ueland 2019). Frewer et al. (2016) assert that this is remarkably difficult. Werder (2019) has stated that the effectiveness of health communication is related to the sharing of meaning between communicators. Werder cites George Bernard Shaw as saying: “The greatest problem in communication is the illusion that it has been accomplished”. It is more than the message and the channels that determine whether or not knowledge leads to behavior change. Resistance may be the result of a lack of motivation (Werder 2019).

In a study carried out in Madagascar on effective forms of communication to fight tuberculosis, it was found that there were differences in understanding according to the population profiles (such as rural-urban, male-female or modern-traditional) and, therefore, there was often the need to use additional channels, with little or no cost, such as indigenous healers (Bello-Bravo 2020). Cultural infrastructures are particularly important in the dissemination and transmission of messages with potential behavior modifiers, which, otherwise, would not reach diffuse populations and users of their own dialects, demonstrating the importance of combining roles and functions between health professionals and actors with special needs and ability to promote social mediation (Osborn 2020). In another study, the messages about the risks of smoking produced positive effects concerning the cessation of smoking in the case of pregnant women in comparison with other participants: there seemed to be a greater awareness of the risks of smoking for mothers and babies (Klein et al. 2020).

The effectiveness of the message, in health or in any other area, is dependent on the profiles of the recipients and on mechanisms that, in specific situations, allow for the “internalization of externalities”. For this reason, broadcasters must be concerned with transmitting content well, so that they reach all people in the same way, whatever their cultural, educational or socio-economic condition. As Bourdieu asserted, we need to be aware that language has to be accessible and appealing for everyone to reach their goals (Bourdieu 1998).

One should understand the kind of resistance strategies that people use to be able to improve the good delivery of health messages (Rains and Turner 2007). To obtain a behavior change, consumers need to perceive the risk information to be relevant for themselves (Ueland 2019). So, a bottom-up approach may be appropriate, that is, creating knowledge about citizen’s concerns, risk perceptions, needs and motivations (Cope et al. 2010), instead of a one-direction message from experts to citizens.

Communication, whatever it may be, imposes a kind of informal contract in which, although the words are not innocuous, a “world” of possible interpretations is present. It always comprises a delimitation and structuring of reality: it is made of inclusions and exclusions and sometimes implies one among several possible categorizations of the object, the receiver being responsible for interpreting and capturing understandings and premonitions (explicit or implicit) of the messages. Communication

can thus delimit or exclude understandings of reality that depend on the people targeted, on their profiles, which form disparate senses and emotions, impossible to fully control, much less when marked by specific, technical and scientific language.

Saussure (1978) has explained that what characterizes a sign, a word, is its value, which is not defined substantively, but through the web of possible relationships in a constellation of meanings. The word 'time' does not have the same value in different languages. The Portuguese word time encompasses the chronological and meteorological aspects, while the English word time only contemplates the former, the latter being the word weather. Saussure also maintains that language participates in the construction of reality. Therefore, different languages make up different world views. Polyphony and plurilingualism, in turn, are constitutive realities of any language, unless it is a dead language. One language hosts several languages, several sociolects, and a society is home to a "plurality of worlds" and worldviews (Bakhtine 1970).

The population that communicates through a particular language is not, in most cases, homogeneous, from a social and linguistic point of view, which implies that not everyone can understand messages in the same way (Ghiglione and Matalon 1978). However, the linguistic heterogeneity in the population may make this purpose difficult. When a health message, for example, a prescription, is not interpreted in the same way by the recipient, its effectiveness collapses, forcing the way in which people communicated to be rethought. This is the biggest challenge in public health communication.

This is consistent with the need for more community-based means of health education, as suggested by Musoke et al. (2016). Health communication should thus involve multiple disciplines, including medical, human, social and communication sciences, to redefine human health according to a humanistic understanding of human motivation (Werder 2019). Nevertheless, there is little cross-fertilization of research across disciplines (Errecaborde et al. 2019). As there is a lack of collaboration among sectors, this can lead to conflicting messages or message overload (Münthera and Bojesen 2019). This is especially worrying when the information of the message is not fully credible, as there is a lack of regulation about who informs what, which may result in the provision of misinformation (Maia et al. 2019). The One Health approach and the need for One Communication is very evident when we think about personal hygiene from all perspectives. Hand washing is the most important means to prevent infection transmission, whatever the origin of the infection may be (Mbakaya et al. 2017; Guo et al. 2018): foodborne (Ejemot-Nwadiaro et al. 2021), nosocomial (Allegranzi e Pittet 2009) or even MERS-CoV (Yang et al. 2019) and COVID-19 (Zhou et al. 2020). In the sense of adopting the same and single message even from different sources, one Communication is more effective in health promotion and communication.

One Health issues are complex and interdisciplinary collaboration as well as knowledge sharing must be promoted, with a view to creating an innovative implementation, management and strategy to face diseases (Humboldt-Dachroeden et al. 2020). Ueland (2019) has shown that risk communication requires in-depth knowledge about the receivers of information, who may be as diverse as each country, culture and person.

In summary, there is a lack of communication between involved sectors and stakeholders considered relevant from a One Health perspective, but also an insufficiently effective communication by experts to citizens. It is known that experts' perceptions of risks are not consistent with community perceptions (Bearth and Sigrist 2016). Citizens ask for "less statistics and more stories". One must also be aware that the internet is becoming the most important information channel (Ueland 2019). There is a huge gap in

the communication between researchers and policy-makers. There are population groups characterized by functional illiteracy, a problem widespread in less developed countries, but is invisibly present in developed countries as well. Illiteracy patterns are associated with cultural, educational and socioeconomic factors of the common citizen and also lack of specialized knowledge, namely of journalists (Jayaram 2015).

Scientific research is crucial for an innovative and sustainable health system, but it should also be communicated to policy-makers, who in turn have to analyse multiple determinants of disease like individual, social, economic, cultural and environmental conditions (Sinclair 2019; Kakkar et al. 2019). There is a need for demonstrable and understandable data for decision-makers to persuade them for this call to adopt a One Health approach in their national or regional context (Sinclair 2019). Even editors of scientific journals seem to give only modest attention to One Health when compared to the relevance given to it by health practitioners or international organizations (Humboldt-Dachroeden et al. 2020). Finally, there is also a need to improve communication with citizens (Kakkar et al. 2019).

The barriers to implementing One Health can seem endless, but the results would be impressive and effective. As stated by Deem and Brenn-White (2020), One Health is the key to prevent COVID-19 from becoming the new normal. Besides One Health, we also need One Communication.

4 One communication – our experience

4.1 Food Safety – the case of listeriosis

Listeriosis is a disease caused by the consumption of foods contaminated with *Listeria monocytogenes*. Clinical manifestations of invasive listeriosis include septicaemia, meningitis and abortion, and have a high mortality rate (Mateus et al. 2013). The most recent report from the European Food Safety Authority (EFSA) stated that cases of listeriosis remained stable in 2015–2019 after a long period of an increasing trend; the number of listeriosis outbreaks in 2019 was 50% higher compared with 2018. The case fatality was high (17.6%) (EFSA and European Centre for Disease Prevention and Control [ECDC] 2021), which makes listeriosis a very important foodborne disease to follow closely. Pregnant women have an infection risk twenty times higher than healthy adults (Ogunmodede et al. 2005) and, since listeriosis is transmitted mostly through the consumption of contaminated food, we wondered whether Portuguese pregnant women were aware of this infection risk. To answer this question, a questionnaire was designed and applied in person to 956 Portuguese pregnant women with the main aim to identify their knowledge about food safety in general and listeriosis in particular (Mateus et al. 2014). We stated that about half of the respondents believed they had received enough information, but they did not recognize the name *listeriosis*, they did not change eating habits since having become pregnant and they did not avoid high-risk foods. Doctors were their most mentioned and requested source of information. In the face of these responses, we concluded that there is a lack of information and, above all, there is a lack of communication.

The word communication comes from the Latin word *communicare*, which means to put in common and to communicate understanding. This is not an easy issue at all, especially for health professionals who are usually overwhelmed with tasks. So, this may be an excellent opportunity to work on multidisciplinary approaches with food safety experts, other healthcare professionals, communication/marketing professionals, among

others. Citizens reveal different dimensions of personality in different contexts – so the more diverse the professionals working in health communication, the more likely they are to communicate effectively.

In this survey, we also concluded that barriers preventing health care providers from educating pregnant women on food safety should be further investigated. So, a subsequent questionnaire about listeriosis knowledge was directed to health care providers (Mateus et al. 2018). We collected 671 answers and 77% of the respondents admitted that they do not inform pregnant women about preventive measures against listeriosis. Yet, 87% would like to receive information about the disease and preventive measures. There is thus a clear space once again for collaboration between sectors.

Following these two surveys, a review of risk communication strategies on listeriosis for high-risk groups (Maia et al. 2019) was performed. We realized that educational sciences should also be involved, as well as children's education. The channels should be diverse. Professionals' perceptions are quite different from the citizens', and this can create a genuine moral conflict. To avoid or mitigate these conflicts, it would be very important to involve the media in two ways: scientists/researchers/experts need to be trained to learn how to communicate with media professionals, and media professionals need to be trained about science communication.

4.2 Zoonoses – the case of hydatidosis

Hydatidosis, also known as cystic echinococcosis, causes severe symptoms and possible death in humans, and results in huge economic livestock-associated production losses, being considered a neglected and re-emerging disease (Moro and Schantz 2009). This disease is hyperendemic in the Mediterranean region and sine-endemic in Portugal (McManus et al. 2003; Morais 2013). Communities involved in livestock production are a vulnerable population, however little is known about their awareness about this disease. So, once again, we developed a questionnaire to be administered in-person with the aim to assess sheep and goat farmers' awareness of, perceptions of, and attitudes towards parasitic zoonoses and hydatidosis (Mateus et al. 2016). We collected 279 answers and 97% of these farmers had never heard about hydatidosis. Those who claimed to know about it adopted high-risk behaviors. We realized that culture and traditions play an important role in the perception of diseases and that is why regional studies are so important (and often neglected by scientific journals). To be able to communicate with this target population, we learned that we need “more experience, less science”. That is coherent with the most frequently referred source of information – veterinarian – even if we were asking about a zoonotic disease.

The truth is that doctors delegate to veterinarians the responsibility of health education regarding zoonoses, but there is no communication among both these professionals. We know from existing literature that collaboration and communication should occur between the human and animal health sectors, involving working groups of multidisciplinary individuals at a national level. This should happen mostly at a regional and local level.

Following this quantitative study, we carried out a qualitative study based on interviews. Although the findings of this study have not yet been published, this has been a unique research experience, as we found the most unlikely stakeholders to help us with the health education of farmers: mayors and priests. This may be because, as psychologists say, we agree more with those we like than with those who are right. A mixed methods approach seems to be more adequate for community-based studies,

especially when their aim is health education through a One Health approach. One should not forget that some farmers are not used to reading – or do not know how to read – so visual messages are more appropriate for this target population.

4.3 Environmental Health – the case of vector-borne zoonoses

Vector-borne diseases - infections transmitted by the bite of infected arthropod species - are widespread in Europe. These diseases are spreading dangerously due to climate change, urbanisation and globalisation (Tomassone et al. 2018). Among them, *Dirofilaria immitis* is one of the most frequently detected mosquito-borne zoonotic nematodes in mammals in Europe and dirofilariasis is considered an emerging zoonosis (Reddy 2013). Leishmaniasis is transmitted through the bite of phlebotomine insects, and in Portugal, its incidence in animals and humans is increasing. Ehrlichiosis and anaplasmosis are diseases transmitted by ticks that are in expansion, highlighting the risk of exposure and transmission of diseases.

We carried out a study to assess the awareness of pet owners and other citizens about these vector-borne diseases in two different regions from Portugal: Minho and Alentejo (Mateus et al. 2019). For this purpose, three different questionnaires were designed and administered. Concerning dirofilariasis, 53% of the 316 respondents lived in a high-risk exposure area for the disease, and yet only 34% recognized the term dirofilariasis, and among these, only 13% confirmed it was a zoonosis. The majority of the persons only considered the tick as being a vector and the most dangerous one, mosquitos and others being neglected. However, from the 239 respondents to the tick-borne diseases' questionnaire, only 7.9% recognised the name of these diseases. These respondents wanted to receive information firstly from a veterinarian, but immediately followed by the family doctor/nurse. In relation to leishmaniosis, 291 persons completed the questionnaire, and 182 (62.5%) had heard about the disease, even if most of them (n=163, 56.0%) were unaware about its zoonotic potential.

Veterinarians may have an essential role in public health education, but they are generally unaware of this. Citizens still prefer to receive information from a health (human or animal) professional, especially face-to-face, even if in the most recent survey there was a greater percentage of persons who referred to web channels.

5 Conclusions

WHO stated that to be able to communicate risk, one should identify target groups and, above all, understand their risk perceptions and communication needs. That was what this team set out to do, through a bottom-up approach. We intended to become familiar with citizens' knowledge and risk perceptions and awareness, because in our experience this is the most appropriate way to identify the different population targets and to adapt the message and the channels to each one of these targets, so that communication can be effective.

In this chapter, we aimed to highlight the One Health concept as a crucial opportunity for communication between different silos, as we have been doing for several years. Our team incorporates a microbiologist expert in food safety, a sociologist expert in environment and health, and a veterinarian with a special interest in zoonoses. WHO considers health communication as essential in controlling an outbreak as epidemiological assessments or laboratory analyses. Our personal experience with the COVID-19 pandemic allows us to test this. We already know One Health, but we really need to leverage One Communication.

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