



## Multidisciplinary Knowledge sharing Approach in the Control of Zoonotic diseases in Nigeria: Motivations and Hindrances

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### SUMMARY

This study explores factors that motivate and also factors that hinder knowledge sharing among public health professionals in managing zoonotic diseases in Plateau State, Nigeria. A qualitative method using a case study research design was used for the study. Data were collected through a semi-structured interview and focus group discussion. The analysis was done using qualitative content analysis. Findings revealed that; Forum to share knowledge, Adequate funding, Professional ethics, Policy, and Organizational support constitutes major motivating factors for multidisciplinary knowledge sharing; while Professional dichotomy, Negative traits, Mono-disciplinary training, Lack of policy, Lack of funds, and Leadership Issues are major hindrances to multidisciplinary knowledge sharing in managing zoonotic infections in Plateau State, Nigeria. The approach to multidisciplinary knowledge sharing will be positive when factors that motivate public health professionals are adequately in place; these will result in a robust investigation of potential zoonotic diseases in Plateau State, Nigeria. However, factors that constitute hindrances are major setbacks in managing zoonotic diseases which must be addressed in order to harness the full potentials of the various public health professional working in Plateau State, Nigeria for the benefit of all.

**Keywords:** Multidisciplinary knowledge sharing, Public Health professionals, Zoonotic Infections

### INTRODUCTION

Zoonotic infections are transmitted directly and indirectly from animal to humans and are a major cause of morbidity and mortality worldwide (Kruse et al., 2004; Chhabra and Singla 2009; Fong, 2017). With a population of over 208 million (Worldometers, 2021), and the need for improved health care

delivery (Welcome, 2011), Nigerians are at considerable risk considering the seriousness of these infections. Some of the zoonotic infections that are endemic in Nigeria include rabies, Lassa fever, tuberculosis, trypanosomiasis, toxoplasmosis, yellow fever, influenza, monkeypox and more

recently coronavirus (Omitola, & Taylor-Robinson 2020; Agusi *et al.*, 2020). Every year nearly 2.5 billion cases of human illness and 2.7 million human deaths occurred worldwide (Salyer *et al.*, 2017). These illness and deaths have an immeasurable consequence on the individual and families as they tragically and irrevocably change people's lives and destiny. In addition to the huge emotional toll these deaths and morbidity exact on those affected, they also cause considerable economic losses to victims, their families, and the nation. While there is no single intervention that can address all cases of zoonoses, it is now increasingly recognized that the establishment of inter-sectoral collaborative mechanisms is one of the most efficient strategy to address existing and emerging zoonoses (FMH/FMARD/FME 2019). One-way collaborative effort is made possible is through multidisciplinary knowledge sharing among various health professionals, specifically veterinary, medical and environmental health professionals. Multidisciplinary knowledge collaboration among these professionals is significant because it allows for the integration of expertise from different fields of knowledge which will lead to the development of cost-effective disease control strategies such as; organizing shared surveillance systems, common training of health professionals and training of high-risk population (Munyua *et al.*, 2019). However, despite the huge burden of endemic zoonosis and increased risks of emergence of novel zoonotic diseases, there is minimal inter-sectoral collaboration on zoonosis among health professionals (Belay *et al.*, 2017). This is due to several factors that contribute to this minimal inter-sectoral collaboration. This study tries to uncover hindrances and suggest possible motivations that will encourage knowledge sharing through collaboration between the various

stakeholder involved in the control of zoonotic diseases.

## **METHODS:**

The study adopted a qualitative research method to uncover the motivators and barriers to multidisciplinary knowledge sharing among public health professionals in managing zoonotic diseases in Nigeria.

### **Data Collection and Analysis**

This study adopted semi-structured interview and focus group discussion (FGD) for data collection. The words of the participants from the semi-structured interview and FGDs were recorded on an audio tape recorder and transcribed. The transcripts were analysed using thematic content analysis. All transcripts of the interviews were vigorously read, examined and re-examined for phrases and sentences that form patterns that are consistent with the objectives of the study. These patterns were grouped into categorized and sub-categories using the analytic inductive process described by (Creswell 2013). The analysis is presented on Table 1 and 2.

## **RESULTS**

In all, 30 health professionals comprising of 10 each of Veterinary doctors, Medical doctors and Environmental health workers in Plateau state, Nigeria were enrolled in the study. The narratives on factors that motivate public health professionals to share knowledge in managing zoonotic diseases were transcribed and categorized. Accordingly, illustrative narratives of respondents were classified into 5 categories and 12 sub-categories (Table 1).

Table 1: Illustrative narratives on factors that motivate public health professionals to share knowledge managing zoonotic diseases Plateau State, Nigeria

<b>RQ 1</b>	<b>Categories</b>	<b>Subcategories</b>	<b>Illustrative narratives</b>
What are the factors that motivate public health professionals to share knowledge in managing zoonotic diseases?	1) Forum to share Knowledge	Joint conferences	<i>“I believe that if there can be a forum whereby you can have joint conferences between the different health professionals, microbiologists, veterinarians, physicians, laboratory technicians sitting under the same roof and sharing knowledge as a people belonging to the same family, then with time you will find out that it will bring people closer and closer and the need to interact will become more visible and the conflict between one group and the other will be reduced”.</i>
		The laboratory setting.	<i>“The second level is in the laboratory, that is where the veterinarian or the physician” and other health professionals can also come together to interact. If you are able to isolate for example a deadly zoonotic organism from an animal and you are able to link it to what is happening by isolating the same organism in a human; you see, that setting brings you together. So that interface in the laboratory is suitable for professionals to interact”.</i>
		Public health and veterinary public health.	<i>“On the professional level, the public health on the human side and the veterinary public health; so, I think there is already an established position where there will be rubbing of minds where professionally, people can come together”</i>
		The One Health Programme	<i>“...gradually the understanding is coming up... this concept of one health, you find out that people are gradually coming to work together. You find veterinarians working together with human doctors and human doctors collaborating with veterinarians and you have medical laboratory technicians too, the laboratory scientists also working in the area of disease diagnosis, human disease epidemiology and so on and so forth. So gradually, people are beginning to see the need to work together”</i> <i>“...at the policy level, the government has begun a programme called Nigeria Field Epidemiology Training Programme which brings together these entire professional group and train them in the same classroom for a postgraduate master degree”</i>
	2) Funding	Funding for research	<i>“...once there is proper funding, the professionals will be motivated to share information”</i> <i>“...you see in Nigeria today we talk about funding. Well, when it comes to funding, that is the real motivation, you need to be motivated to do research through funding, and so funding is another factor”</i>
	3) Professional Ethics	Professional ethics	<i>“...it is part of the call of what health professionals’ do- sharing knowledge and information”</i> <i>“...one other factor that motivates us to share knowledge is the professional ethics. If you understand the ethics of your profession, you can hinge on that, anything you do to be a better professional cannot be wished away. If we understand that it will help us”.</i>
			The support of the

		allied health workers	<i>knowledge”</i>
	4) Good Policy Guideline	Government policy	<i>“...if government policies are properly drafted so that there will be cooperation and collaboration between professionals, it can motivate. So, good policies that are encompassing will also motivate cooperation and collaboration”</i>
	5) Organisational Support	Administrative interest	<i>“...when the management or whosoever is in charge is interested in an area, then effort is being channeled, and it makes you see the reason why things should be done in that area; and when you know that your boss is interested, there is this loyalty to the cause, you are motivated”</i>
		Remuneration	<i>“...remuneration is key to it. If you don’t have good remuneration, it’s a problem. Without these, I don’t think people will be motivated enough to handle some of these things... remuneration must be seen to be equal”</i>
		Work condition	<i>“I think paramount is the work condition of the health worker, the professional saddle with management of zoonoses control. If the work environment is satisfactory the welfare is properly taken care of, they have that sense of satisfaction, it helps them to collaborate”</i>
		Availability of information	<i>“...and also, the availability of information to health professionals, current information, when you are vested with knowledge, there is that tendency that you will want to share, especially if it is current knowledge”</i>

Similarly, the responses to “the factors that hinder knowledge sharing among public health professionals in managing zoonotic diseases were transcribed and categorized. 6 categories and 14 sub-categories were identified based on the narratives (Table 2).

Table 2: Illustrative narratives on the factors that limit knowledge sharing among public health professionals in managing zoonotic diseases

<b>RQ 2</b>	<b>Categories</b>	<b>subcategories</b>	<b>Illustrative narratives</b>
What are the factors that hinder knowledge sharing among public health professionals in managing zoonotic diseases?	1) Negative traits	Superiority and inferiority	<i>“... it’s largely from the fact that we are not putting heads together for whatever reasons. Either for superiority or inferiority as the case might be. Probably the physician might feel too big to refer to a fellow professional in the veterinary profession or even a veterinarian might not want to refer to a fellow Laboratory scientist or lab technician to try to seek for information... possibly the other one feels more superior than the other in knowledge or the other person feels inferior ... so these are some of the factors that can actually give rise to situations like that”</i>
		I know it all	<i>“...the feelings of ‘I know it all’... People feel that their own is better than your own. That is another big factor that can hinder us from coming together to know as</i>

			<i>professionals”.</i>
		Ego	<i>“... some of the problems have to do with individual ego irrespective of profession... Ego is a big problem. You have veterinary professionals and human medical professionals that are open-minded, but we have also people with ego and such people, whether you train them as veterinary or human doctors, the ego will exist, which will not allow them to effectively close the gap that is required in delivering health-care services to either our animals or human patients”.</i>
		Parochial or narrow minded.	<i>“...Parochial and narrow-minded thinking that, this is my area but when it has to do with zoonotic diseases it is just beyond one person’s area, so if we are narrow minded, we will not share information”</i>
	2) Professional Dichotomy	Protecting your professional group	<i>“...their response shows that they are aware of the need but there is some form of “Protectionist” and “isolationist”. They want to protect their respective areas so that members of different professional groups would not veer into their own areas. This does not augur well for knowledge sharing”</i> <i>“...even among the human medical profession we are having inter-disciplinary problems, not to talk of outside that... talking about crossing over to the veterinary medicine. So, humanity is such that everybody more or less wants to protect his domain. It has not been helping actually”.</i>
		Professional bias	<i>“Sometimes professional bias, people will think this is for us we don’t need any other person to come into it. The veterinary doctor will think this is my profession, any other profession should not come into it, and it’s my work, so that they will not take up our job. It’s not supposed to be like that. It’s supposed to be an effort together to manage the zoonotic diseases”.</i>
		Professional rivalry	<i>“...there is professional rivalry. This put some kind of restrictions on our ability to interact”</i> <i>“...health professionals can’t shy away from that, there is inter-professional rivalry”</i>
		Professional dichotomy	<i>“...historically, there was nothing like veterinary or human medicine. The history of medicine started with people doing what is called comparative medicine... It is as time progressed that there was this dichotomy; human and veterinary medicine... scientists have realized that this dichotomy and this so-called specialization are working against them. So currently at the global level there is the move to bring back again all health professionals to one”.</i> <i>“In my opinion, they have some level of unity among them, yet if you go deep inside you find professional dichotomy in the hidden aspect”.</i>
	3) Mono-disciplinary training	Narrow based training	<i>“... I think it’s the kind of training that we receive in Nigeria. Historically, our training has always been boxed up. Everybody is in his own box but the world has moved on... it’s becoming smaller and smaller. Our universities need to start looking at training in a way that professionals will overlap. Before students graduate, they are able to see the interface with other professions. So these are the</i>

			<i>areas where I think in knowledge sharing, the difficulties begin from the kind of training that we get”.</i>
		Agencies are specialized	<i>“... agencies are specialized, ministries are specialized we tend to forget, overlook the fact that other professionals can come in and make a contribution on what is happening there whether it is health agency, a veterinary agency. When you are doing research and it is multi-disciplinary, it becomes more robust and you are able to see from a wider perspective what is going on because nature does not occur in a vacuum”.</i>
	4) Lack of Policy	Lack of policy	<i>“...government policy sometimes negates the sharing of information. When governments tend to promote one aspect over another or when the government in their own right feels this group should do it without seeking consent of the professionals themselves”</i>
	5) Lack of Funds	Inadequate funding	<i>“Funds from governments sometimes are inadequate, some research institutions or academic institutions; are not able to provide funds to train people. Once you cannot train people, you have no knowledge to share. It is when you train people that you acquire knowledge to some depth and then you are ready to share but where there is no training and you are just clinging to your basic knowledge you become a local champion”.</i>
	6) Leadership Issues	Leadership issues	<i>“...we have leadership issues, for example we have what is called the Nigeria Center for Disease Control (NCDC), and you can’t have two leaders at the same time. So if they want to appoint a director for NCDC, veterinary doctors want a veterinary doctor to be appointed, human doctors want a human doctor to be appointed, pharmacist believes a pharmacist should be appointed, medical laboratory scientist will say our boss is good, he can do this job”.</i> <i>“...and then the availability of limited positions in relation to the fact that inter-disciplinary knowledge can create the fight for the limited available space”</i>

## DISCUSSIONS

The findings from this study reveals several factors that motivate public health professionals in Plateau state, Nigeria to share knowledge in managing zoonotic diseases. Amongst which are; professional forum, adequate funding, professional ethics, good policy guidelines, and organizational support.

Health professionals consider forum for knowledge sharing as a great motivator for sharing information on managing zoonotic diseases. Forum that motivates public health professionals to share knowledge include; interdisciplinary conferences, the laboratory setting, public health and veterinary public health training programme, research that brings professionals together and monthly meetings. This kind of fora tends to bring professionals closer to interact and exchange ideas. It also reduces friction and professional rivalry. Laboratory setting is another good motivator for knowledge sharing. The laboratory setting creates interplay between the veterinarian, the laboratory scientist, the microbiologist, the physician and other health professionals as the case may be. That interface in the laboratory is suitable for professionals to interact.

Joint public health training programmes is another motivator for knowledge sharing which encourages collaborations between experts on the human and veterinary public health. A good example is the training programme facilitated by Center for Disease Control (CDC) Nigeria under the umbrella of Nigeria Field Epidemiology and Laboratory Training Program (NFELTP) unit. This collaborative forum was introduced to address the increasing threat of zoonotic and epizootic diseases in Nigeria.

Availability of a common database on infectious disease is a motivator for knowledge sharing. In this era of technology, a common data base on

infectious diseases where professionals can have access to information is critical for knowledge sharing. The epidemiology unit of the ministry of health is building up such database with weekly reports of disease situation in Nigeria which it sends to participating professionals. Through this platform, professionals exchange email addresses; weekly disease situation in Nigeria are sent to veterinarians, laboratory scientists and other health professionals in the hospitals and research institutes. A database of this nature helps professionals to upload information that will benefit other health professionals.

Similarly, joint research project was identified as a motivator for knowledge sharing. This refers to a partnership between 2 or more professionals with common research themes working together cooperatively over a project while exchanging opinions from their professional standpoint. This type of forum has mutual merits, and facilitates effective knowledge sharing. It is therefore, possible to expect higher efficiency and synergistic effects in comparison with independent research.

The foregoing highlights the importance of fora for external knowledge acquisition that will generate valuable insight through meaningful collaboration on issues in zoonotic disease management. This is in agreement with earlier observation that social interaction between managers from different units of a multinational corporation was shown to be an important factor stimulating intra- multinational knowledge sharing (Noorderhaven and Harzing, 2008). Furthermore, adequate and joint grant funding for research and training is a motivating factor for multidisciplinary knowledge sharing in managing zoonotic diseases. Adequate funding is a sign of commitment to multidisciplinary knowledge collaboration on zoonotic disease by the health sector and the government. Equally,

multi-institutional research proposals have the potential to demonstrate the excellence and attract grants where research projects, training programmes, field trips, and peer review publications can be readily executed. Availability of funds has a way of attracting experts from various disciplines to contribute to the successful and timely completion of the projects. Other areas that may require funding include; adequate funding for resources in terms of well-equipped libraries, longer-term funding to build infrastructures and facilities for effective operations.

Professional ethics; the personal and corporate rules that govern behavior within the context of a particular profession (Your Dictionary online, 2018), was also identified as a motivation for knowledge sharing in managing zoonotic diseases among public health practitioners. Professional ethics promotes collaborative and multi-disciplinary work including knowledge sharing with other health professionals in order to protect and promote the health and wellbeing of patient and the wider community through disease prevention, control and education (Council for Allied Health Professions, 2016). Consequently, public health professionals consider the support of allied health workers in knowledge sharing as a motivator to share knowledge.

Furthermore, a good policy guideline by the public health professional bodies for multidisciplinary team work is a motivator for knowledge sharing among health professionals managing zoonotic disease. Such policies seek to promote information sharing and bridge the gaps between different disciplines in a team and overcoming barriers to sharing information in order to achieve better outcomes for clients between government agencies (OECD, 2013). These policies and procedures form part of the overall

operational guide of each multidisciplinary team by defining roles, rights and responsibilities, allocation of resources across the different health sectors, leadership appointment, composition of training and emergency response team (Moore, 2007; Moonasar *et al.*, 2016).

Organizational support is another motivator of multidisciplinary teamwork with a positive impact on knowledge sharing in managing zoonotic diseases. This refers to the value an organization places on the contributions of her members, provides care about their well-being and fulfils their socio-emotional needs. Organizational support also includes those implicit, unstated aims of organizations which reflect the common interests of its members in terms of career development, welfare, status and power. When an organisation, supports multidisciplinary knowledge work, resources will be channeled towards that goal. In turn this will gain the loyalty of the staff and spur them to higher productivity.

Organization support in the area of remuneration, work condition, availability of information and job security are critical success issues that play important roles in defining the relationships among health professionals and in turn, providing possibilities to knowledge sharing. Organizations therefore, need to harness employee knowledge not only to stay competitive, but also to become innovative through a supportive organizational climate that can bring its entire organizational learning and knowledge to bear on any problem, anywhere in the world, at any time (Vance, 2006; Burton, 2010).

This study uncovers some factors that limit knowledge sharing on managing zoonotic diseases among Public health professionals in Plateau State, Nigeria. These factors include; professional dichotomy, negative traits, mono-disciplinary training, lack of policy, lack of funds and leadership issues.



Professional dichotomy refers to the division among health professionals that have presented the health profession as though entirely separate entity thereby limiting knowledge sharing in managing zoonotic diseases. This has resulted to professional bias and unhealthy rivalry among health professionals and weakens in multidisciplinary teamwork (Ogundipe and Obinna 2014a; Alekhuogie, 2017; Adebayo, 2017). The key drivers of this unhealthy relationship among health professionals in Nigeria include among others the struggle for superiority over others; parochial and narrow mindedness and the disparity in remuneration of health workers.

Sadly, lack of team work has led to poor coordination of patient care, poor utilisation of health care services, patient dissatisfaction, medical errors which often result to avoidable mortalities.

Findings in this study revealed monodisciplinary training as a limiting factor for knowledge sharing among health professionals managing zoonotic diseases. This indicates that the health professional training is narrow based involving a single academic discipline that is targeted at humans or animals where every professional body is confined to that small area of discipline. However, research studies across the globe are increasingly drawing on knowledge and expertise outside of one main discipline (Ilter, 2017).

It is worth mentioning that human and veterinary medicine have a strong cultural background with many subject matters in common, unfortunately the undergraduate and postgraduate education programme (with few important exceptions) do not offer training in inter professional collaborative skills as a determining factor that will integrate all health professionals (Mantovani, 2008). This means that public health professionals trained to be medical doctor; learn to treat, manage, cure and

prevent disease in human patients; while a veterinary doctor learns to diagnose disease in animals, treat, vaccinate, cure where possible; and an environmental specialist do advocacy visit, do surveillances without drawing knowledge and expertise from other public health professionals.

The imperatives of this findings call for the inclusion of inter professional collaborative skills in medical and veterinary curricula to equip the trainees of the desirability of teamwork. With inter-professional collaboration, the weak health system that results in poor health status will be addressed and at the same time improve the health outcome (Akinloye, 2017). There is therefore, the need to include inter-professional collaboration in the educational training programmes for the various professions.

Worthy of note is that, zoonotic diseases are distinct and are cross species diseases, their prevention and control will require unique strategies, based more on collaborative research and training than on a monodisciplinary approach. Such strategies require that a cadre of career-committed professionals with a holistic appreciation of several medical and biological sciences be trained.

Lack of policy guideline was another limiting factor for knowledge sharing among health professionals managing zoonotic diseases. The absence of knowledge sharing policy appears to act as a significant barrier to knowledge sharing among public health professionals on zoonotic diseases management; making it difficult for health professionals from the different health sectors to come together on a round table on zoonotic disease cases with the benefit of the full spectrum of relevant perspective and expertise, which permits full consideration of potential outcomes of decisions taken. The effectiveness of multidisciplinary teams

is limited unless there is a clear guiding principle of inter-professional working. Inadequate or lack of funds constitutes hindrance to knowledge sharing among health professionals managing zoonotic diseases. The extent to which multidisciplinary collaborative programmes are achieved depends largely on the financial provisions supporting it. Good as the concept of multidisciplinary knowledge sharing is to the management of zoonotic diseases; inadequate funds will result in less comprehensive knowledge collaboration from a full team of public health professionals. Adequate funding is therefore, necessary for knowledge collaboration to be achievable.

Therefore, the government must build the political will to fund and strengthen multidisciplinary collaboration among health professionals. Secondly, health professionals need to develop joint funding streams from human, animal and environmental health sectors to support integrated veterinary and public health disease detection, prevention, and response programs. Health professional bodies and policy makers need to provide economic incentives, social support, and communication strategies that encourage early disease reporting and control efforts in animal populations. For example, there is need to provide appropriate compensation and important social support when animal populations may be culled or gathered for the purpose of offering vaccines and other veterinary services to reward early reporting of diseases.

Good leadership is at the center of any meaningful achievement. Leadership issues was identified as a limiting factor for knowledge sharing among health professionals in managing zoonotic diseases. Several studies showed that leadership appears to be a determinant of team success (Misiolek and Heckman, 2005). Contention

and struggle over leadership position affect multidisciplinary knowledge collaboration in zoonotic disease management. Merit rather than sentiments should prevail when appointing individuals to leadership position in order to foster unity and encourage teamwork. It was opined that leadership of a team must be earned through demonstration of skills, competence, and humility that is the hallmark of international best practice (Ogundipe and Obinna, 2014b). Similarly, leadership competencies such as skills and behaviors that contribute to superior performance benchmark should form the criteria for the selection of leaders for the benefit of both the organizations and the employee (Morrison, 2016).

Where necessary, a well-thought-out strategy such as leadership succession plan from among multidisciplinary teams and preferably through multi-professional consensus are required (Byrne 2005).

A major factor identified as the cause of leadership conflict in a multidisciplinary team is lack of a clear strategic plan for leadership succession (Deloitte Development LLC, 2013). For a succession plan to be successful there must be a strategic plan for succession which supports the organization's vision. Therefore, to avoid leadership conflict, agencies responsible for the conduct of interdisciplinary health professionals must ensure they have the appropriate succession plans in place to avert potentially negative impact of leadership changes. Overall, leadership conflicts should be resolved through recognized structures (Barbra and Mutswanga, 2015).

## CONCLUSION

The management of zoonotic diseases can better be achieved through multidisciplinary approach as currently being championed by the One Health paradigm. This is predicated on the motivation to share knowledge

between Public health professionals. Knowledge sharing is facilitated by regular attendance of conferences, adequate funding, professional ethics, good policies and organizational support. However, there exists some setbacks in managing zoonotic diseases which must be addressed in order to harness the full potentials of the various public health professional working in Plateau State, Nigeria for the benefit of all.

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