



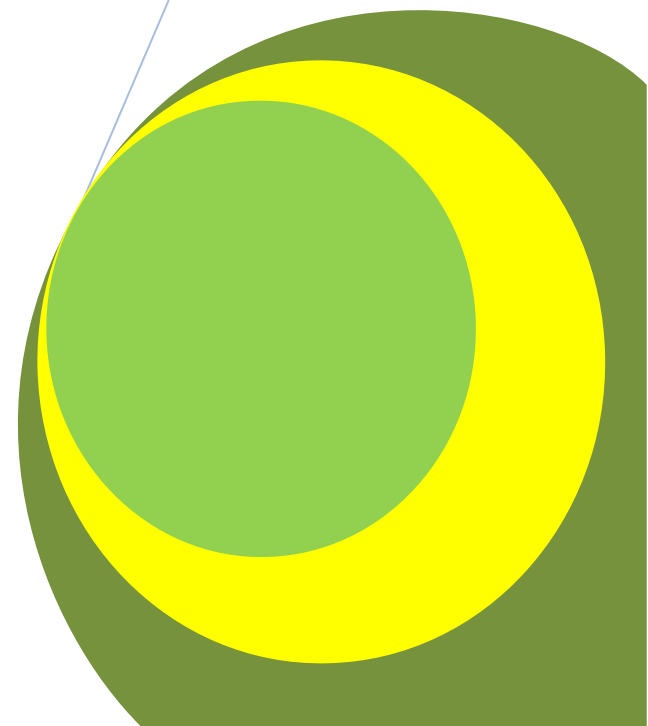
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Research Article

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ABSTRACT

Effective detection, identification, monitoring and control of zoonoses and other animal-derived infections call for embracement of multi- and trans-disciplinary partnership as a means towards optimising the health of humans, animals and their ecosystems. This study was thus aimed at evaluating attitudinal profiles of human, animal and wildlife health experts in Ngorongoro (Manyara Region) and Kibaha (Coastal Region) Districts to this partnered arrangement in dealing with infectious diseases of humans and animals. This was carried out using a structured questionnaire which comprised a 100-point Likert scale on which <60, 60 and 60< points represented unfavourable, neutral and favourable attitudes respectively. The questionnaire was administered to 91 medical, veterinary and wildlife experts in July and August 2012. It was found that, overall, the respondents had positive attitude (64.8%) towards inter-sectoral collaboration. The proportions of the respondents with unfavourable, neutral and favourable attitudes were 22.0%, 8.8% and 69.2%, respectively. The scores by the three categories of experts showed no significant difference ($F = 1.428$, $p = 0.248$). This indicates that human and animal health experts value the use of one health approaches in dealing with zoonoses and other animal-derived infections.

Keywords: Infectious diseases, one health approaches, attitude, Likert scale.

INTRODUCTION

One health approaches that anchor on collaborative efforts of multiple disciplines are pivotal in attaining optimal health for humans, animals, plants and the environment (One Health Initiative, 2011). Some of the one health initiatives have been ephemeral in terms of being one-time development or research projects while others have been more inclusive in terms of capacity building and involving a number of projects with successive phases. Of recent, there have been a number of national, regional and international initiatives to promote the concept of one health in dealing with infectious diseases of humans and animals; particularly zoonoses and other animal derived infections. Despite these initiatives, inter-sectoral partnership has often been erratic and not sustainable. The inter - sectoral

diseases specific working groups that have been formed to address challenges for instance attributed to anthrax, Avian influenza, rabies, Rift valley fever have never been operational beyond the funded project phase. This has resulted in the human and animal health sectors working independently even at times of outbreaks, thereby leading to ineffective use of national resources; competition between the two sectors for the meagre resources; ineffective impacts on the mitigation of risks of for instance infectious diseases. The lack of sustainable institutionalisation of inter-sectoral partnership may be attributed to a number of factors such as attitude of the human and animal health experts, unavailability of adequate resources, lack of clarity of mandates and lack of institutional framework.

With respect to attitude, even staff in the same sector such as the human health or the animal health sector but with different training specialisations like physicians and nurses or veterinarians and animal scientists may have different attitudes towards collaboration among themselves. This has been shown empirically; for instance, in a study by Karima *et al.* (2011) whereby attitudes of nurses and physicians towards nurse-physician collaboration in general medical and surgical units at Mansoura University Hospital, it was found that nurses' attitude toward nurse-physician collaboration was significantly more positive than that of the physicians. With intra-sectoral partnership being so inadequate, it is possible that collaboration between sectors could be more difficult.

Indeed, the problems of inter-sectoral collaboration were highlighted in a study by Mazet *et al.* (2009). Their study, which was conducted by a multi-disciplinary team of researchers including medical and veterinary officers and investigated medical, ecological, socioeconomic and policy issues revealed that whereas local stakeholders and international institutions were supportive of inter-sectoral collaboration in addressing issues of zoonoses and their impact on rural livelihoods, the participation of physicians and public health experts at local and international levels was notably low. The slow pace of involvement of physicians and public health experts may have been due to competing demands on time and resources already dedicated to major diseases such as malaria and tuberculosis (Mazet *et al.*, 2009), their attitudes towards such collaboration generally being either indifferent or unfavourable or influence of their background training.

On the last possibility in the previous sentence, Edwards *et al.* (2004) argue that many medical and nursing educators give anecdotal evidence that education of medical students has militated against collaborative attitudes toward other health care providers and that veterinary students, on the other hand, seem to experience, through their education, a spirit of cooperative teamwork. If some of the team members in the above-mentioned research by Mazet *et al.* (2009) had such training backgrounds, the backgrounds could have influenced their levels of collaboration in the research. Positive attitude towards collaboration among health experts of different disciplines, e.g. medical and veterinary officers, could be enhanced during training, for example through interprofessional education (IPE), which is defined as "members or students of two or more professions associated with health or social care, engaged in learning with, from and about each other" (Barr *et al.*, 2005; Craddock *et al.*, 2006; cited by Bridges *et al.*, 2011). The effect of such education has been experimented and found to be positive with regard to attitude towards collaboration. An example is an experiment of collaborative teaching and learning about basic surgical skills that is reported by Edwards *et al.* (2004) and was conducted in USA involving veterinary and medical university students whose attitude towards collaboration with the other type of student was tested; after the experiment, it was found that attitudes of both the medical and veterinary students' had increased in terms of confidence in one's own surgical skills and in collaboration with the other type of student.

This study was aimed at evaluating the attitudinal profiles of frontline staff at district level to the adoption of one health approaches in dealing with surveillance and control of zoonoses and other animal derived infections, the focus being to determine the extent to which medical, veterinary and wildlife health experts were utilising and would be willing to support inter-sectoral collaboration.

METHODOLOGY

This study was conducted in Ngorongoro District in Manyara Region and Kibaha District (Coastal Region) in Tanzania in July and August 2012. The two districts were selected purposively because both have pastoralists who interact intimately with their livestock thereby enhancing the transmission of zoonotic diseases like rabies, brucellosis, TB and anthrax. The study involved 91 medical, veterinary and wildlife health experts (Table 1) out of 100 planned who were informed of the purpose of the study and the associated confidentiality. The majority of the respondents, who were selected purposively depending on their availability, had diploma qualifications and a few Bachelor or M.Sc. qualifications.

Table 1: Respondents for this paper

Category of respondents	District of work		Total
	Ngorongoro	Kibaha	
Medical Officer	21	30	51
Veterinary Officer	10	20	30
Wildlife Officer	9	1	10
Total	40	51	91

The respondents were interviewed using a self-administered questionnaire that they filled out in the presence of the researchers. The role of the latter was to clarify any items of the questionnaire in case the respondents needed clarification. The questionnaire was formulated with the aim to capture information on the respondents' attitude towards inter-sectoral collaboration. Besides some questions and other items, the questionnaire comprised a 20-statement Likert scale that was used to determine attitude. Half of the items in the scale had positive connotation while the other items had negative connotation (Table 2). The minimum and maximum scores on the scale, if one had responded to all the 20 items, were 20 and 100 respectively. There were five alternative responses to each of the items: strongly disagree (1 point), disagree (2 points), undecided (3 points), agree (4 points) and strongly agree (5 points). The minimum of 20 points would be scored by one who would choose strongly disagree for all the 20 items, and the maximum of 100 would be obtained by someone who would choose strongly agree for all the 20 items. In the analysis, 20 to <60, 60 and 60< points represented unfavourable, neutral and favourable attitudes towards one health approaches, respectively. The method that was used in this research to measure the behaviour of liking or disliking collaboration, using aggregated points scored from various statements is in line with Ajzen and Fishbein's (Undated) argument that in measuring attitude-behaviour linkages better results are obtained when an aggregate measure of behaviour is used by combining a number of items rather than using single items measuring behaviour.

The data were analysed using the Statistical Package for Social Sciences (SPSS) programme. Descriptive analysis was done by computing frequencies, means, standard deviations and minimum and maximum values of individual variables. Cross-tabulation, chi-square test and level of significance were computed to determine whether there was significant association between expert category and attitude towards collaboration. The levels of attitude (in terms of number of points scored on the Likert scale used to determine it) towards one health approaches were compared using one-way ANOVA.

RESULTS AND DISCUSSION

The majority of the respondents (64.8%) indicated that inter-sectoral collaboration in reference to management of risks attributable to zoonoses was inadequate. In connection with this, the respondents were asked about the extent to which they would support multidisciplinary collaboration among medical, veterinary and wildlife experts with respect to detection, prevention, control and treatment of infectious diseases, if it were institutionalised. The findings on this are presented in Figure 1. More than three-quarters (78%) of the respondents were ready to support the adoption of one health approaches (Fig. 1).

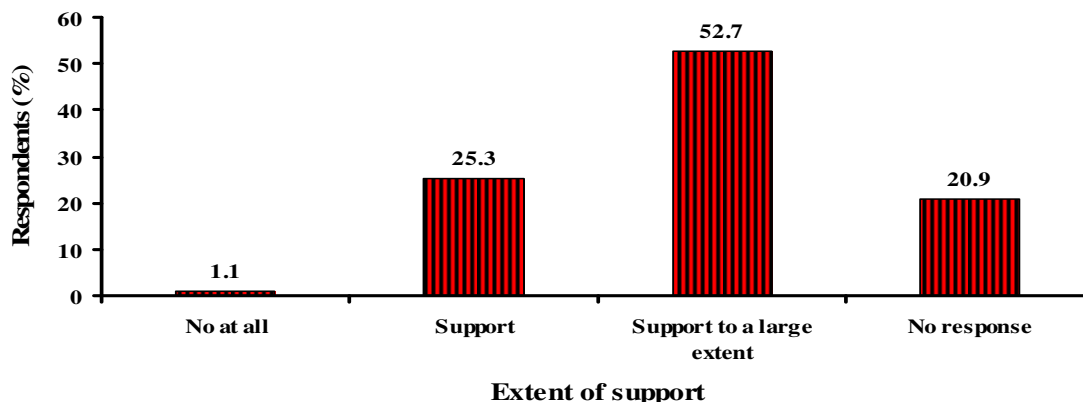


Figure 1: Extent to which medical, veterinary and wildlife officers would support one health approaches

The proportions of the respondents who disagreed, those who were undecided and those who agreed with the 20 statements of the Likert scale are presented in Table 2. The results show that, of the 10 attitudinal statements with positive connotation, the respondents had the highest favourable attitude towards sharing data (95.6%) and monitoring infectious diseases (93.4%). The other levels of positive attitude with respect to the statements that had positive connotations are as shown in Table 2.

It was evident that the respondents had less unfavourable attitude towards the notation that collaboration would hardly relieve people of zoonoses (45.0%) and that diagnosis and survey (37.3%) as well as research (32.9%) for zoonoses will be impaired because of lack of an institutional framework for inter-sectoral collaboration. The attitudinal profiles for other parameters are as shown in Table 2.

The minimum and maximum numbers of points scored on the Likert scale were 21.0 and 94.0, respectively, and the average was 64.8 over 100.0. Those who had unfavourable, neutral and favourable attitudes were 22.0, 8.8 and 69.2%, respectively. Since 20 to 60, 60, and more than 60 points indicated unfavourable, neutral and favourable attitudes, respectively towards one health approaches, overall, the respondents had favourable attitude towards one health approaches.

Table 2: Proportions of the respondents who dis/agreed with the attitudinal statements

Attitudinal statement	Disagree (%)	Undecided (%)	Agree (%)
1. The collaboration among medical, veterinary and wildlife officers would greatly facilitate detecting and dealing with zoonoses	8.8	1.1	90.1
2. The collaboration would help relieve people of zoonoses	8.8	3.3	87.9
3. The collaboration would ensure better access to health inputs by poor people and their livestock	14.3	6.6	79.1
4. Medical, veterinary and wildlife officers can diagnose and do survey on zoonoses together by using effective surveillance systems.	8.8	2.2	89.0
5. Medical, veterinary and wildlife officers can research together on zoonoses with linkage to local public health systems.	6.6	1.1	92.3
6. Medical, veterinary and wildlife officers can change from single disease approaches control measures to more integrated health promotion.	7.7	5.5	86.8
7. Medical, veterinary and wildlife officers sharing data about diseases could be one of good ways of collaboration	2.2	2.2	95.6
8. Medical, veterinary and wildlife officers monitoring infectious diseases collaboratively would enhance early detection of diseases.	2.2	4.4	93.4
9. The collaboration among medical, veterinary and wildlife officers should start by the experts being trained on some common aspects, e.g. neglected zoonoses.	9.9	8.7	81.4
10. Medical, veterinary and wildlife officers having more positive attitude towards one another's field of specialisation can greatly enhance collaboration among them.	12.1	9.8	78.1
11. The collaboration between medical and veterinary officers would add nothing to detection and dealing with zoonoses.	82.4	4.4	13.2
12. The collaboration would hardly relieve people of zoonoses.	48.4	6.6	45.0
13. The collaboration would only benefit better-off people who can pay for medical and veterinary services.	74.7	4.4	20.9
14. Medical, veterinary and wildlife officers cannot diagnose and survey zoonoses together because of lack of an institutional framework for their collaboration.	53.9	8.8	37.3

15. Medical, veterinary and wildlife officers cannot research together on zoonoses because of lack of an institutional framework for their collaboration.	59.4	7.7	32.9
16. Changing from single disease approaches control measures to more integrated health promotion is impossible because of scepticism between medical and veterinary officers.	63.7	7.7	28.6
17. Medical data are too confidential for sharing with veterinary and wildlife officers.	58.3	9.8	31.9
18. Incidences of diseases cannot just decrease due to medical and veterinary officers monitoring infectious diseases collaboratively.	63.7	6.6	29.7
19. There is no way medical, veterinary and wildlife officers can be trained on common aspects.	83.5	6.6	9.9
20. There is no need for collaboration in disease detection, surveillance, treatment, and control among medical, veterinary and wildlife officers.	87.9	4.4	7.7

Cross-tabulation and a chi-square test were used to determine whether unfavourable attitude was more associated with any category of the health experts interviewed, and the results are presented in Table 3.

Table 3: Respondents with different attitudes towards one health approaches

Groups of experts	Unfavourable attitude (%)	Neutral attitude (%)	Favourable attitude (%)
Medical officers	19.6	5.9	74.5
Veterinary officers	23.3	13.3	63.3
Wildlife officers	30.0	10.0	60.0
All	22.0	8.8	69.2
Pearson Chi-Square = 2.139 (p = 0.710)			

The results in Table 3 show that medical officers led others in having favourable attitude (74.5%), followed by Veterinary officers (63.3%) and Wildlife officers (60.0%). However, as shown by the p-value (Table 3) that was greater than 0.05 (the lowest level of significance), there was no significant association between attitude towards collaboration and category of health experts. This means that the three categories of health experts had almost the same attitude. These findings are contrary to some findings of previous studies that medical personnel are less cooperative with experts of other disciplines in dealing with infectious diseases, as learnt in the Introduction Section from Mazet *et al.* (2009).

Table 4: Comparison of results of the points scored by the three groups of experts

Group of experts	n	Points scored			Sum of squares	df	Mean square	F	Sig. (p-value)	
		Mean	Min.	Max.						
Medical Officers	51	66.2	53	94	Between groups	260.5	2	130.3	1.428	0.245
Veterinary Officers	30	63.4	21	92	Within groups	8029.6	85	91.2	-	-
Wildlife Officers	10	61.6	56	73	-	-	-	-	-	-
Total	91	64.8	21	94	-	8290.2	87	-	-	-

As shown by the p-value in Table 4 that was greater than 0.05, there was no significant difference in points scored by medical, veterinary and wildlife officers implying that the three groups of experts had more or less the same level of attitude towards one health approaches.

Besides the comparison in Table 4 using one-way ANOVA, the same method of comparison was used to compare the scores of the three groups of the respondents who had different attitudes on One Health approaches. The results showed that the scores were significantly different at the 0.1% ($F = 29.788$, $p \leq 0.001$) (Table 5). Twenty out of 91 respondents (22.0%) who had unfavourable attitude were really opposed to the idea of application of One Health approaches.

Table 5: Comparison of the points scored by respondents with various attitudes

Attitude	n	Mean points scored	Min.	Max.	Sum of squares		df	Mean square	F-value	Sig.
Unfavourable	20	54.3	21	59	Between Groups	3346.7	2	1673.3	29.788	0.000
Neutral	8	60.0	60	60	Within Groups	4943.5	88	56.2	-	-
Favourable	63	68.7	61	94	-	-	-	-	-	-
All	91	64.8	21	94	-	8290.2	90	-	-	-

CONCLUSION AND RECOMMENDATIONS

On the basis of the findings presented above, it is concluded that the majority of medical, veterinary and wildlife health staff value one health approaches and hence they would support their application, if they were institutionalised in sector operations. The result that medical personnel (who are the majority of health experts) led other health experts in having favourable attitude towards collaboration, unlike in the past when physicians were said to be less cooperative with experts of other disciplines in dealing with infectious diseases, as seen in the findings section, gives an indication that scaling up of the practice of one health approaches is quite possible. Therefore, mainstreaming of one health approaches in sector operations will underpin the partnered arrangements that would ensure effective surveillance and mitigation of risks attributable to human and animal infections. The finding that the levels of attitude towards one health approaches were not significantly different among the three categories of experts implies that frontline health staff had almost the same attitude towards the adoption of one health approaches. Therefore, this further highlights the readiness of frontline staff in collaborative arrangements, thereby calling for development of appropriate inter-sectoral strategies that will guarantee effective partnership.

The finding which showed that there were significant differences in the points scored among those who had unfavourable, neutral and favourable attitudes towards one health approaches implies that the 22% of the respondents who had unfavourable attitude should not be neglected; they may undermine efforts to institutionalise one health approaches and hence constrain the envisaged impacts. Therefore, interventions to institutionalise the approaches should include development of strategies for expert engagement and advocacy in order to ensure optimal "buy in" of all staff for practice of One Health approaches. This is designed to ensure effective adoption of One Health approaches in addressing risks of zoonoses and other animal derived infections.

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