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Letter to the editors

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Assessment of pig farmers' knowledge on influenza A virus, and adoption of biosecurity measures in areas with previous outbreak of avian influenza in the Greater Accra Region of Ghana

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To the Editors PAMJ One Health

Pig handlers, especially in West Africa, give little attention to biosecurity and hygiene issues. Low level of compliance among poultry and pig farmers has also been demonstrated in areas with previous outbreak of avian influenza in Ghana [1]. This was partly attributed to costs, inadequate veterinary officers and attitudinal orientation of which level of education was implicated [2]. Consequently, low-level compliance might boost reverse zoonotic transmission of influenza viruses with its concomitant potential pandemic [3]. Therefore, this study sought to assess pig farmer´s knowledge on influenza A virus, and adoption of biosecurity measures in areas with previous outbreak of avian influenza in the Greater Accra Region of Ghana.

The findings revealed that more than half of the respondents lacked awareness of influenza A in pigs, had no knowledge on mode of transmission and had no idea with respect to prevention. This is similar to a research conducted in Kumasi, Ghana, which demonstrated a low level of awareness about swine influenza among pig handlers [4]. This further agrees with what was reported on biosecurity in areas with previous outbreak avian influenza in Ghana, ascribing low compliance to low level of awareness and cost [1]. Source of information was on the low ebb as over 50% of the respondents had no source of information. Strikingly, only about 2% of the respondents got information from extension/veterinary officers. Research by Rahman has emphasized the extent to which knowledge and source of information influence decision of farmers for sustainable agriculture [5].

The findings from the study also demonstrated that farmers practiced one form of bio-security or another. However, the implementation of bio-security measures was very low among the respondents, where 62.5% had no functional footbath; 67.5% allowed free access to piggery; 47.5% did not have personal protective equipment; 60% of the farms not fenced and 47% obtained starter stock from other farmers. This study reveals a yawning gap in the benefits associated with the practice of biosecurity; as opined by a study in Brazil [6], where lower seroprevalence (prevalence ratio 0.75, or 25% lower) was associated with a farm fenced with a bird proof net compared with farm without bird proof netting. A similar result reminisced lower anti-Avian Influenza Viral (IAV) antibodies in pigs, attributing this to the availability of fence in such farms as opposed to non-fenced farms [7]. The most probable explanation for this is protection against indirect transmission of influenza virus mechanically by birds and other wild species [8]. Research elsewhere also implicated open partitions between pens, and uncontrolled access to farms as recipe for herd infection [7,9].

The study further explored association between socio-demography, such as level of education and adoption of biosecurity (fencing and functional footbath). There was a significant correlation between education and the adoption of certain biosecurity measures, such as fencing and availability of functional footbath. Respondents with some form of education, more especially secondary and tertiary education had better understanding of mode of transmission and prevention. This further suggests that, this could probably be attributed to education offering better opportunity for the improvement of one´s perception about a pandemic. This corroborated previous study which demonstrated that cost and lack of relevant education by livestock farmers were probable reasons for the adoption of some biosecurity measures on livestock farms [2]. It is therefore imperative to train pig farmers to recognize influenza-like symptoms in pigs, such as nasal discharge, coughing, fever, dyspnea, and conjunctivitis [10]. Hence, envisaging motivational educational farm level model will be a thrust of

great importance to both the literate and illiterate at large. Again, there was an association between level of education and knowledge on mode of transmission of influenza. This could have arisen as a result of education, offering easy access to information from different sources, such as internet, radio and television. This also offsets the overreliance of farmers on extension service delivery.

Conclusion

The overall respondents adopted some form of biosecurity; but the general outlook is not impressive, notwithstanding a greater profit and cost effectiveness associated with applying biosecurity practices as compared to treatment and vaccination. Educational background has a significant influence on the knowledge of respondents regarding the virus and the adoption of biosecurity. However, formal education alone is not a guarantee to automatic translation of knowledge into attitude and practice. Motivational integrated educational model, both formal and informal, should be adopted at the farm level for the benefits of all farmers. Source of information about influenza has exposed some lapses in the delivery of extension services in Ghana, representing an information gap.

Competing interests

The authors declare no competing interest.

Authors' contributions

All authors SS, FK, JA, AD, MT, EPO, TO and BOE contributed to the study´s design; SS, FK MT and EPO drafted the manuscript; JA, AD, TO and BOE critically revised the manuscript and provided valuable inputs. All the authors have read and agreed to the final manuscript.

References

1. Asare RD, Folitse RD, Burimuah V, Atawalna J, Tasiame W, Emikpe BO. Knowledge, attitudes and practices relating to avian influenza among poultry workers in Ejisu-Juaben Municipality of Ashanti Region, Ghana. PAMJ - One Health. 2021: 4(1). **Google Scholar**
2. Brennan ML, Christley RM. Biosecurity on cattle farms: a study in North West England. PLoS One. 2012;7(1): e28139. **PubMed**| **Google Scholar**
3. Australian Pork Industry Biosecurity Programme (APIBP). Farm biosecurity. 2003;1: 26.
4. Adeola OA, Olugasa BO, Emikpe BO. Detection of pandemic strain of influenza virus (A/H1N1/pdm09) in pigs, West Africa: implications and considerations for prevention of future influenza pandemics at the source. Infect Ecol Epidemiol. 2015 Dec 28;5: 30227. **PubMed**| **Google Scholar**
5. Rahman S. Environmental impact of modern agricultural technology diffusion in Bangladesh: an analysis of farmers´ perceptions and their determinants. J Environ Manage. 2003 Jun;68(2): 183-91. **PubMed**| **Google Scholar**
6. Serafini Poeta Silva AP, de Freitas Costa E, Sousa E Silva G, Souza CK, Schaefer R, da Silva Vaz I Jr *et al*. Biosecurity practices associated with influenza A virus seroprevalence in sows from southern Brazilian breeding herds. Prev Vet Med. 2019 May 1;166: 1-7. **PubMed**| **Google Scholar**
7. Simon-Grifé M, Martín-Valls GE, Vilar MJ, García-Bocanegra I, Mora M, Martín M *et al*. Seroprevalence and risk factors of swine influenza in Spain. Vet Microbiol. 2011;149(1-2): 56-63. **PubMed**| **Google Scholar**

8. Allerson MW, Cardona CJ, Torremorell M. Indirect transmission of Influenza A virus between pig populations under two different biosecurity settings. PLoS One. 2013 Jun 21;8(6): e67293. **PubMed**| **Google Scholar**

9. Poljak Z, Dewey CE, Martin SW, Christensen J, Carman S, Friendship RM. Prevalence of and risk factors for influenza in southern Ontario swine herds in 2001 and 2003. Can J Vet Res. 2008;72(1): 7-17. **PubMed**| **Google Scholar**

10. World Health Organization (WHO). WHO manual on animal influenza diagnosis and surveillance. Geneva, Switzerland: WHO. 2002;15-64. **Google Scholar**