Knowledge, attitude and practice of equine vaccination among horse owners in Kano, Northern Nigeria

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Abstract

Equine infectious diseases continue to be one of the most important threats to the overall health of domesticated horses and proper vaccination is one the most important preventive measure against such infectious diseases. This study assessed the knowledge, attitude and practice of equine vaccination among horse owners. Forty horse owners completed the questionnaire and all the respondents were male with an average mean age of 41.9years and 50% were degree holders. A positive attitude 14(35%) toward equine vaccination was recorded. 10% had training on horse management and 19(47.5%) were aware of equine vaccination. Statistically significant associations were observed between practice of vaccination and awareness of equine vaccination and having vaccination programme. However no statistical association was observed between practice of vaccination and attending training on horse management. The common vaccinable diseases encountered as reported were tetanus (28/40), influenza (17/40), and AHS (6/40) with 37.5% and 2.5% of the respondents agreed that tetanus and AHS respectively are the most common cause of horse death. The diseases commonly vaccinated against were tetanus (22.5%) and influenza (5%). The use of veterinary practice is very low as 54.6% of the respondents do either vaccinate their horses by themselves or used their groom. Their knowledge of equine vaccination is generally poor, particularly with tetanus vaccination, as majority cannot differentiate the usage of tetanus antitoxin and toxoid. In conclusion, we believe that the poor knowledge showed by the horse owners reflects inadequate information about the important of equine vaccination. It is therefore important for horse owners to understand good vaccination programme is a critical aspect of good managerial practices. More so there is need to work with their local veterinarians in developing vaccination programmes for the common diseases seen in the area.

Key words: attitude, horse, knowledge, practice, vaccination

Introduction

Equine diseases such as tetanus, African Horse sickness (AHS) and Influenza, have been major challenges facing the equine industry due to its high morbidity and mortality rates (Olaleye *et al.*, 1990; Adeyefa and Hamblin, 1995; Adeyefa *et al.*, 2000; Kay and Knottenbett, 2007; Kazeem *et al.*, 2008). The increasing international movement of horses combined with the relaxation of veterinary regulations has resulted in an increased incidence of equine infectious diseases, and vaccination has become the primary method for the effective control of these diseases (Minte *et al.*, 2004). Vaccination is the administration of antigenic materials to stimulate an immune system to develop adaptive immunity to a pathogen. Vaccination reduces the risk of a disease outbreak from occurring, the spread of disease in the event of an outbreak and the severity of illness in affected animals. While therapeutic or prophylactic use of drugs and vaccination

both play an important role in animal disease control, vaccination is increasingly being viewed as the more sustainable option. This view is influenced not only by the potential that vaccination offers for greater economic efficiency but also by the concerns that have been raised about the selection of drug-resistant pathogens and the potential harmful effects of drug residues in animal products and the environment. Vaccination has had a major impact on the control of epidemic viral (Von Teichman *et al.*, 2010; Perkins *et al.*, 2011) and bacterial diseases (Van Galen *et al.*, 2008) of horses especially tetanus, influenza, strangle, African horse sickness (AHS) and rabies. Although it is possible for immunity to develop in an unvaccinated horse, the horse must however first encounter the disease and then survive the encounter before the development of immunity. With potentially life-threatening diseases and high value of horses, this is not an option as it could result in the death of the animals. Considering the population of horses in Kano and number of diseases reported to affect horses in Nigeria in particular, the knowledge, attitude and practice of equine vaccination among the horse owners in Kano metropolis is investigated in this study.

Materials and Methods

Study Area

The study was carried out in Kano metropolis of Kano State of Northern Nigeria. It is situated between latitudes 11° 59'59.57° N to 12°02'39.57 N of the equator and longitudes 8°33'19.69 to 8°31'59.69 E and 472m above sea level. The city lies to the north of Jos plateau in the Sudan savanna region that stretches across the south of the Sahel. Kano metropolitan covers 499km^2 area and comprises 8 local governments with population of 2, 828,861 (Ayila *et al*, 2014). The horse is one of the most common domestic livestock and it is used in durbar as the heritage in Kano.

Data collection

Questionnaires were administered to 50 randomly selected horse owners in Kano metropolis. The questionnaire was constructed using information from reviewed literature (Wilson *et al.*, 1995; Mackay, 2014).The questionnaire comprised 3 sections: demographic information; attitude toward horse vaccination; and knowledge about common horse disease, prevention by vaccination and management.

Statistical analysis

The data generated were analyzed using GraphPad prism 5.01. Chi-square was used to determine the association between practice of vaccination and awareness of equine vaccination, having vaccination programme and attending training on horse management. Values of $p<0.05$ were considered significant.

Results and Discussion

A total of 40 (80%) horse owners completed the questionnaire. The age of the respondents ranged between 15 and 82 years with mean age (± SD) of 41.9(±15.9). All the respondents were male. 50% of the respondents were degree holders, 32.5% had secondary school certificate, 12.5% had primary school leaving certificate and 5% had no formal education. The mean time (± SD) in years at which horse owners have been involved with horses was 21.7(± 15.7) and range between 1 and 60years.

Of the total 40 respondents, only 10% attended training on horse management and 19(47.5%) were aware of equine vaccination. A positive attitude toward equine vaccination was reported by 14(35%) of the respondents. Of which only 15% had vaccination programme for their

horses. There were statistically significant association between practice of vaccination and awareness of equine vaccination (Table 1) and having vaccination programme (Table 2). However no statistical association was observed between practice of vaccination and attending training on horse management ($X^2 = 3.126$, df =1, p = 0.0771).

This finding showed that the rate of awareness of equine vaccination increase the chance of horse owners to vaccinate their horses and also have vaccination programme that cover the common diseases in their localities. The common diseases encountered as reported by the respondents were colic (29/40), tetanus (28/40), influenza (17/40), piroplasmosis (15/40), AHS (6/40), and sarcoid (10/40), with 52.5% and 37.5% of the respondents agreeing that colic and tetanus respectively are the most common cause of horse death. The least diseases reported to be associated with mortality were AHS (2.5%) and equine piroplasmosis (2.5%). The diseases commonly vaccinated against were tetanus (22.5%) and influenza (5%).

Knowledge of high mortality rate associated with tetanus was a dependent factor that influences horse owner attitude toward tetanus vaccination as practice of tetanus vaccination is higher among the respondents that agreed that tetanus is a killer disease of horses. Although no statistical significant association between practice of tetanus vaccination and believing tetanus is a killer disease ($X^2 = 1.615$, df =1, p = 0.2.37) was observed. Most respondents incorrectly thought that tetanus toxoid (37.5%) or tetanus antitoxin (17.5%) alone is often given when managing wound in unvaccinated horses (Table 3). Only 6(15%) of the respondents gave both vaccinations while 30% did not give any of the two when managing wound in unvaccinated horses. This shows that horse owners lack the knowledge of the difference between the two biologicals and the indications for their usage. And this could be a reason for the high occurrence of the diseases as reported by the respondent.

Horses are one of the more susceptible species to tetanus based on relative amount of toxin per weight required to produce lethal disease (Smith and Williams, 1984). This is coupled with the fact that horses may

Table 1: Effect of vaccination awareness on practice of equine vaccination

		Awareness of vaccination	
		Yes (%)	No (%)
Practice of vaccination	Yes	10(25)	4(10)
	No	9(22.5)	17(42.5)
$X^2 = 4.945$	df = 1	p = 0.0262	

Table 2: The relationship between having vaccination programme and practice of vaccination

		Presence of vaccination programme	
		Yes (%)	No (%)
Practice of vaccination	Yes	6(15)	8(20)
	No	0(0)	26(65)
$X^2 = 13.11$	df = 1	p = 0.0003	

often be exposed to environments containing spores of *Clostridum tetani*, increasing the risk of contamination of wounds. These factors warrant good tetanus prophylaxis as part of routine veterinary care for horses in the equine industries.

Of those that practice vaccination, 86.8% of the respondents imported their vaccines or sourced them from veterinary pharmaceutical shops within Nigeria. 54.6% do vaccinate their horses by themselves or used their grooms. A negative attitude toward maintaining cold chain of vaccine was observed with 95% of the respondents lacking the knowledge of how vaccines and other pharmaceutical products are to be kept. This finding showed that the use of veterinarians in vaccinations and management of diseases of horses is low. This could in part be attributed to high occurrence of infectious diseases (Adeyefa and Hamblin, 1995; Adeyefa *et al.*, 2000; Ehizibolo *et al.*, 2014) that are better prevented by vaccination in conjunction with good management practice. This may be due to improper use of vaccines and drugs, inadequate storage facilities for vaccines and drugs, and sometimes administration of wrong doses for wrong conditions or indications.

This study also showed that the horse owners have poor knowledge of importance of equine vaccination irrespective of their educational level, age and the years of experience involved with horse handling. Generally they have negative attitude towards vaccination and it might be a reflection of insufficient or lack of information about vaccination as an important part of equine health care. However, horse owners need to understand that equine vaccinations are categorized into "core" vaccines and "risk-based" vaccines (Wilson *et al.*, 1995). Core vaccinations are those that protect from diseases that are endemic in a region, those with potential public health significance, those required by law, the virulent/ highly infectious and those posing a risk of severe diseases. Risk-based vaccines, on the other hand, vary based on the region, the population within an area, and between individual animal within a given population. This is the reason why there is no standard vaccination programme for horses and each horse differs in its vaccination requirements. It is therefore important for them to work with their local veterinarian in developing a vaccination programme as they can provide critical insight into the common diseases seen in the area and the similarities and differences

Table 3: Knowledge of tetanus vaccination among horse owners

Knowledge about tetanus vaccination	Response (%)					
	Yes	No	No idea	Correct Answer	Incorrect answer	Don't use
Practice of tetanus vaccination	22.5	77.5	0	NA	NA	NA
Tetanus a killer disease of horses	37.5	0	62.5	NA	NA	NA
Mode of keeping vaccines	5	95	0	NA	NA	NA
Use of antitoxin and toxoid during wound management	15	85	0	NA	NA	NA
Use of toxoid only during wound management	NA	NA	NA	0	37.5	62.5
Use of antitoxin during wound management	NA	NA	NA	0	15	85

NA means not applicable

African horse sicknes sserotypes 5 and 9 after vaccination with serotypes 8 and 6. *Vaccine* 28(39):6505-17.

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