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Knowledge and Perceptions on recognizing Colic among Horse Handlers' in Nigeria

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ABSTRACT

Colic is one of the most common medical problems that horse handlers or owners encounter, and also among the most prevalent emergency conditions of concern to veterinarians. The capacity of a handler or owner to recognize colic and seek help is a crucial step in determining the outcome of a case. The purpose of this study was to evaluate horse handlers' knowledge and opinions on recognizing colic. Structured open and close ended questionnaires were used to obtain information from 77 participants. Information on demographic, understanding and recognition of the normal horse, understanding and recognition of colic in the horse, personal experiences with colic and sources of information on colic were obtained. Text box was also provided. Descriptive statistics and Chi square were the analytic methods used. Most horse handlers did not know or gave erroneous values for their horse's normal clinical parameters. Only 5% (n= 4/77), 12% (n=9/77) and 3% (n=2/77) of participants gave answers that fell within the reference range values for heart rate, rectal temperature and respiratory rate respectively. There was association between knowledge of normal heart rate ($P<0.05$), respiratory rate ($P<0.05$) and rectal temperature ($P<0.05$), and participants level of education. Most horse handlers indicated they would check faecal output (90%; n = 70/77) and appetite (88%; n = 68/77) if they felt their horse had colic. Also, majority of the respondents said unless colic signs were severe and continuous, they would not call a veterinarian and prefer to ask other handlers or use their personal experience to get information on colic. In conclusion, horse handlers have a poor understanding of colic, with misunderstandings and gaps in their knowledge. Hence, the need for trainings and educational programmes are recommended for horse handlers to assist them in making the right decisions.

Keywords: colic, horse, knowledge, handlers, Nigeria

INTRODUCTION

Colic is often referred to abdominal pain in the horse (Mehdi and Mohammad, 2006). Colic is the most prevalent emergency of concern to veterinarians and the leading cause of death in horses (Hillyer *et al*., 2002; Mayaki, 2017; Tannahill *et al.,* 2019). Age, breed, nutrition and feeding practices, dental caries, weather, helminth infestation, enteroliths, use of analgesics, exercises, and past history of colic are all predisposing factors (Hillyer *et al*., 2001; Hudson *et al*., 2001); Archer and Proudman, 2006; Olusa and Akinrinmade, 2014, Mayaki *et al.,* 2018; Omoniwa *et al.,* 2021). The differential diagnoses for colic are multiple and include infectious and non-infectious causes of enteritis, obstructive disorders (mechanical and functional), congenital disorders, gastroduodenal ulceration, peritonitis, uroperitoneum, faecaliths, enteroliths and Phytobezoar (Gitari *et a*l., 2017; Cook and Hassel, 2014)

Common complications of unmanaged or poorly managed colic include, death, peritonitis, intestinal rupture, septicemia, post surgical ileus, endotoxaemiac shock, jugular thrombophlebitis, delayed wound healing and bowel obstruction (Mair and Smith, 2010).

Mayaki *et al*. (2018) reported the prevalence of colic to be 58.9% (96/163) and 48 horses died out of the 96 animals that had colic in Sokoto, Nigeria. In a retrospective study, Mayaki, (2017), had a prevalence of 18.37% over a 15 year period.

As reported by Bowden *et al.* (2020), the initial step to deciding the outcome of a colic case is the capacity of the owner or handler to recognize the condition and seek assistance.

Often, diagnosis of any clinical condition including colic is frequently missed or delayed, especially in mild cases, due to a lack of awareness, knowledge and understanding among owners, handlers, trainers, and veterinary clinicians (Hodgson *et al.,* 2007; Fogle *et al.,* 2008; Olusa and Akinrinmade, 2014).

Nigerian population of horses is about 200,000 – 240,000 according to Anyanwu *et al*. (2018). Horses found in Nigeria are commonly the Arabian, Dongola, and Sudanese breeds, which are commonly reared in Northern Nigeria and used in all parts of the country for ceremonial, draft, transport, food, sports, and research purposes (Garba *et al.,* 2011; Agina and Ihedioha, 2017).

To discover gaps in current knowledge and decision-making barriers, researchers must look into horse handlers' baseline awareness of colic, their motives and hurdles for obtaining veterinary help, and their responses to different clinical signs of colic.

The aim of this study was to learn more about horse handlers' knowledge, awareness, and experience with equine colic, as well as to identify factors that influence horse handlers approach to a colicky horse.

MATERIALS AND METHODS

Sample Area

This study was carried out in three states (Oyo, Ogun, and Lagos) in South-Western Nigeria. Horse handlers in Polo clubs, Educational Institutes, police mounted troop and private owners across these states were targeted.

Development and Administration of the questionnaire

Structured open and close ended questionnaires were prepared and comprised of 5 sections namely: 1. Demographic information; 2. Understanding and recognition of the 'normal' horse; 3. Owners' understanding and recognition of colic in the horse; 4. Personal experiences with colic; 5. Sources of information on colic. Text box was provided to give normal values for heart rate, respiratory rate, rectal temperature and also for colic definition. One hundred (100) questionnaires were administered to grooms, stable managers, owners, veterinary assistants and trainers.

Data Analysis

Analysis was done using SPSS version 20.0 statistical package. Descriptive statistics and Chi square test were used to test for association between categorical variables. P value< 0.05 was considered significant. Reference ranges used to define normal heart rate, respiratory rate and rectal temperature in this study were generated from the Mercks Veterinary Manual, 10th edition (2010).

RESULTS

Survey distribution and responses

Out of (100) questionnaires distributed to horse handlers, only Seventy- seven (77) handlers participated in this survey.

Horse handler demographics

Participants between the age group of 41 to 50 years old were most involved in this study (38%, n = 29/77). The study population based on state was 32% Oyo State based (n = 25/77), and 55% from Lagos State (n = 42/77) and 13% from Ogun State (n=10/77). All the respondents were male. 23% of the respondents had primary school leaving certificate (n=18/77), 60% had secondary school certificate (n=46/77), 10% had diploma certificate (n= 8/77) and 7% were degree holders (5/77) (Fig 1). None of the participants had formal equine qualifications.61% of participants have been involved in keeping horses between 1-10years (n=47/77) while 16% (n= 12/77) had 11-20 years' experience, 18% (n= 14/77) had 21-30 years' experience and 5% (n=4/77) had 31 and above years of experience (Fig 1). Also, 74% of participants (n=57/77) had horse keeping as their only job while 26% (n=20/77) use horse keeping as alternative job (Fig 1).

About (53%, n=45/77) of the participants use their horses for Polo activities, 23% as security (Escort, crowd control) (n=19/77), 7% as teaching/education (n=6/77) and 16% for ceremonial use (n=13/77) (Fig 1).

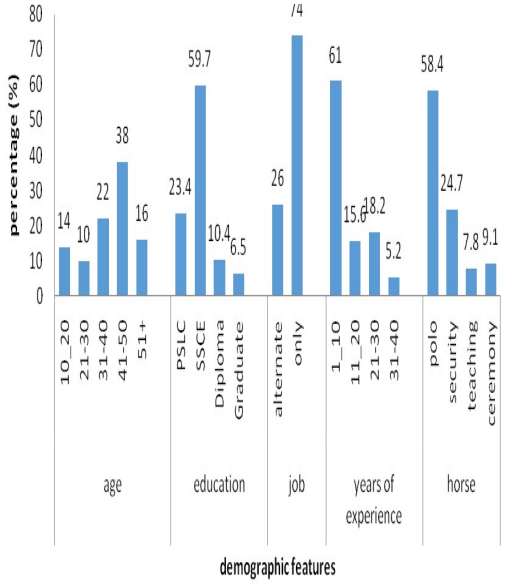

Fig 1: Respondent's demographics

Horse handlers' perceptions and understanding of the 'normal' horse

Respondents' knowledge of the normal healthy horse was assessed in the first part of the survey. They were asked about the normal health parameters they thought they could accurately measure in their horses. Majority of the respondents lacked confidence in their ability to accurately measure any of the parameters (75%; n= 58/77) while 19% believed they could accurately measure rectal temperature (n=15/77), respiratory rate (5%; n=4/77), heart rate (5%; n=4/77), mucous membrane color (25%; n= 19/77) and gut sound (4%; n= 3/77) (Fig 2).

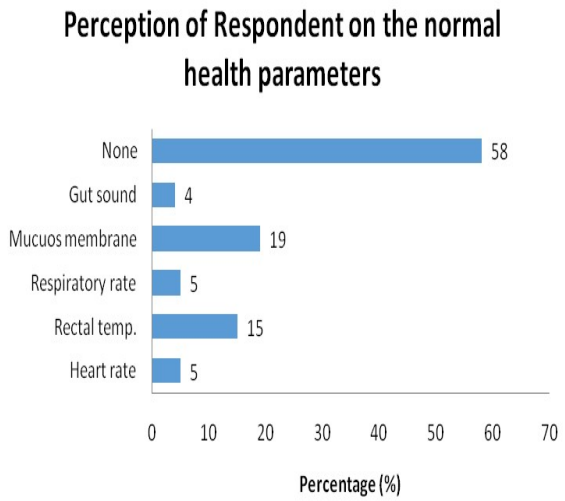

Fig 2: Perception on normal health parameters

The lowest and highest normal values for heart rate(beats per min), rectal temperature (^{O}C) and respiratory rate (breaths per min) were requested from each participants and their responses were compared to the reference range values in the literature (Merck's manual, 2010) to see if any of the values provided were outside of the normal range.

5% (n= 4/77) of the respondent gave figures that fell within the normal reference range for heart rate (28-40 beats per min), 12% (n= 9/77) for rectal temperature (37.2-38.2 ^{O}C) and 3% (n= 2/77) for respiratory rate (10-14 breaths per min) while 10%(n=8/77), 25% (n=19/77) and 6% (n=5/77) of participants gave values that fell outside the reference range for heart rate, rectal temperature and respiratory rate respectively. However, majority of the participants (85%; n=65/77), (64%; n= 49/77) and (91%; n=70/77) were not sure and did not provide values for the heart rate, rectal temperature and respiratory rate respectively. The values given for heart rate, rectal temperature and respiratory rate ranged from 18 to 180 beats per min, 20 to 50^{O}Cand 5 to 120 breaths per minute respectively.

There was association between knowledge of normal heart rate (P=0.0, df=6, X^2=121.4), respiratory rate (P=0.0, df=6, X^2=64.6) and rectal temperature (P=0.0, df=6, X^2=64.6) and participants level of education. There was no association with knowledge of normal values and participants years of experience (heart rate: P=0.1, df=6, X^2=5.4; respiratory rate: P=0.3, df=6, X^2=7.2; rectal temperature: P=0.5, df=6, X^2=11.7) and age (heart rate: P=0.1, df=8, X^2=14.1; respiratory rate: P=0.8, df=8, X^2=4.8; rectal temperature: P=0.2, df=8, X^2=12.0). P value ≤ 0.05 was considered significant.

Horse handlers' perceptions and understanding of equine colic

The respondents were asked how they would assess and respond to signs of colic in their horse in this section of the survey. The questions in this section asked participants how they would react if their horses showed specified changes while all other parameters remained normal.

The changes were divided into three sections: changes to a horse's defecation, behavioral changes and clinical changes. When asked how they react to changes in their horse's defecation, majority of the participants would call a veterinarian if there is blood present in faeces (97%; n=75/77), watery faeces (81%; n= 63/77) and no/fewer faeces (76%; n=59/77) and ask a friend if mucous (92%; n=71/77) or worms (80%; n= 62/77) are present in their faeces (Fig 3).

In response to behavioral changes, the majority of participants would monitor/observe horses that were quiet/dull (96%; n = 74/77) and pawing (88%; n=68/77) (Fig 4).

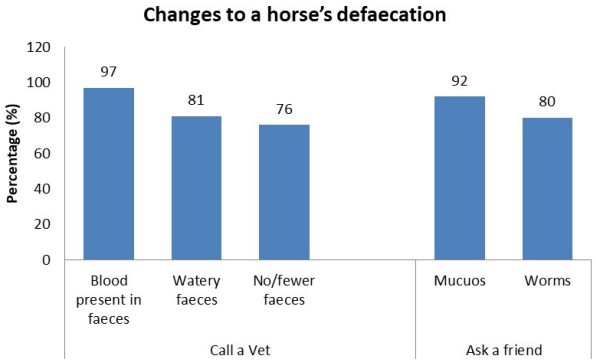

Fig 3**:** Participants response to changes to horse's defecation

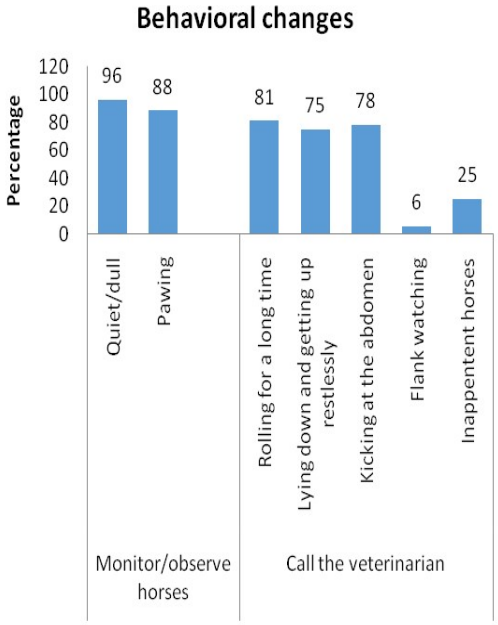

Fig 4: Participants response to behavioural changes in the horse

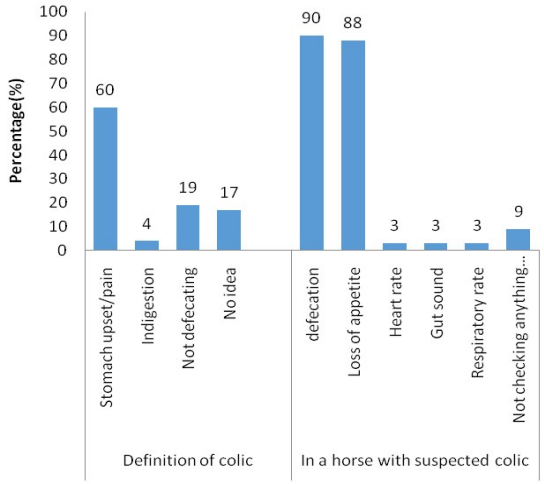

Fig. 5: Participants response to clinical changes in the horse

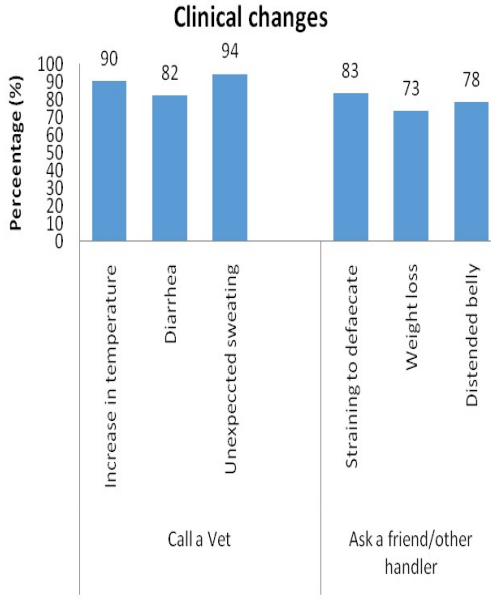

Fig 6: Participants response to definition of colic and what to observe during colic

The majority of participants would call the veterinarian for horses that were rolling for a long time (81%; n = 62/77), lying down and getting up restlessly (75%; n = 58/77) or kicking at the abdomen (78%; n = 60/77). 6% (n= 5/77) participants said they would call the Veterinarian for horses that were constantly watching the flank and 25% (n=19/77) for inappentent horses. Most participants (97%; n=75/77) selected the response that they would not call a veterinarian, if the horse was lying quietly or rolling for less than five minutes (Fig 4).

Participants response to clinical changes showed that majority will call a veterinarian if there is increase in temperature (90%; n=69/77), diarrhea (82%; n=63/77) and unexpected sweating (94%; n=72/77) and ask a friend/other handler if they noticed a horse straining to defecate (83%; n=64/77), weight loss (73%; n=56/77) and distended belly (78%; n=60/77) (Fig 5).

The respondents were then asked to provide a text response with their definition of the term "colic". There were 64 text responses, which were categorized into 3 parts; stomach upset/pain (60%; n=46/64), indigestion (4%; n= 3/64) and not defecating (19%; n= 13/64) with eating of sand/dirt as the major cause. 17% (n= 13/77) of participants left the space blank (Fig 6).

Lastly, participants were asked what they would look for in their horse if they suspected it had colic before notifying anyone else. In a horse with suspected colic, the majority stated that they would assess defecation (90%; n = 70/77) and loss of appetite (88%; n = 68/77) while a small proportion of participants said they would check heart rate (3%; n= 2/77), gut sound (3%; n= 2/77), respiratory rate (3%; n= 2/77) and not check anything themselves and would immediately call a veterinarian on observing signs of colic (9%; n= 7/77) (Fig 6).

Use of information and resources

Participants were asked where they would go for further information and if they wanted to learn more about how to recognize and treat colic. Most participants would ask other handlers (51%; n = 39/77), 25% (n= 19/77) said they would ask veterinarians while fewer participants said they would read books (5%; 4/77), use the internet (5%; n= 4/77) and personal experience (53%; n= 41/77) (Fig 7).

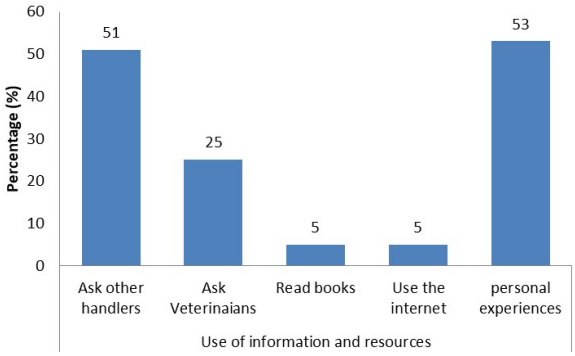

Fig 7**:** Use of information and resources

Personal experiences of colic

58% (n= 45/77) of the participants reported that they had experience of a horse being treated on the stable yard and recovering while 19% (n= 15/77) had experienced horse recovering without needing any medical treatment. Most participants also had experience of a horse dying from colic (57%; n = 44/77) (Fig 8). None of the respondents had never seen a horse with signs of colic undergone surgery or euthanized.

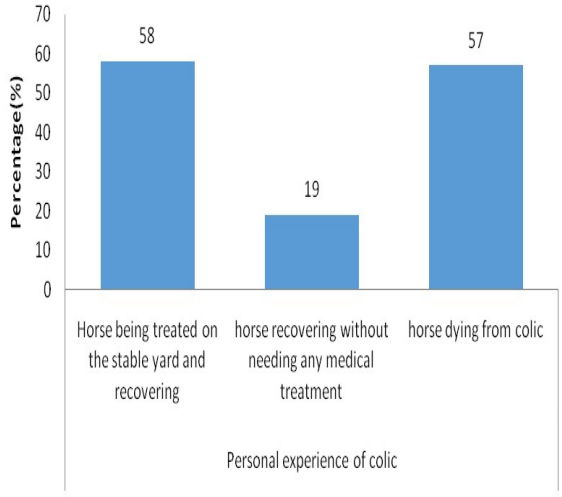

Fig 8: Personal experience of colic

DISCUSSION

Equines are prone to colic due to their unique anatomy of digestive system. Hence**,** horse handlers' perception of colic including their knowledge, awareness, and experience, as well as their attitudes toward responding to signs of colic is important.

All respondents were male and majority of them reside in Lagos. Most participants were secondary school certificate holders and none of the participants had formal equine education.

From this study, over half the participants could not accurately measure a number of clinical parameters in the normal horse but few of them could measure rectal temperature, mucous membrane, heart rate, respiratory rate and gut sound. This can be due to the low level of education by most handlers.

A significant number also stated that if their horse had colic, they would assess some signs like faecal output (90%) and loss of appetite (88%) before contacting anyone else. These parameters can be important indicators of colic (Lyons and Carey, 2014). The findings of this study demonstrated poor knowledge of normal range values for heart rate, rectal temperature and respiratory rate by the handlers as majority of them could not give correct or not sure of the normal range values. However, parameters like heart rate, respiratory rate and rectal temperature can help handlers recognize a range of different diseases and this could in part be attributed to high occurrence of infectious diseases in the horse (Adeyefa and Hamblin, 1995).

Improving horse owners' knowledge of normal parameters will bring benefit across a wide range of diseases. Handler's reaction to changes such as defecation, behavioural and clinical changes in horses with colic were investigated and result showed that most handlers would necessitate getting veterinarian assistance for signs like bloody, watery, no/fewer faeces, rolling for a long time, lying down and getting up restlessly, kicking at the abdomen, increase in temperature, diarrhoea and unexpected sweating. Majority of the handlers also said they would not call a veterinarian or prefer to ask other handlers/friends or observe the horse for many signs like mucous or worms in faeces, quiet/dull horse, pawing, lying quietly or rolling for less than five minutes, straining to defecate, weight loss and distended abdomen. Some of these signs can be present in healthy horses, but they can also indicate colic and this is a concern about how to make decisions for horses with less severe symptoms of colic which might be the only presenting signs.

Participants were asked about colic definition in the text box which majority were able to define as stomach pain, indigestion and unable to defecate. This study showed that most handlers were aware and familiar with the word colic but had an erroneous conception that it is caused by eating of sand/dirt. Horse handlers also had limited knowledge about colic as majority also indicated that signs like faecal output and loss of appetite were the most important signs to look out for in a suspected colic case. It was obtained from this study that most horse handlers get information about colic from other handlers and from their personal experience. This also support findings by Scantlebury *et al.* (2014) and Bowden *et al.* (2020) that most handlers obtain information about colic from their personal experiences.

It was obtained from this study that most handlers would not ask or call a veterinarian to get information about colic. This was consistent with Edeh (2018) study on equine colic, knowledge and practices of horse handlers in Nigeria. This study describes horse handlers' response about their knowledge and opinion when it comes to a common and serious problem in the horse. Therefore, it is crucial to organize trainings or educational programmes for horse handlers in these areas as this will help them to respond to emergency diseases in their animals in a timely and suitable manner. In conclusion, horse handlers have a poor understanding of colic, with misunderstandings and gaps in their knowledge about its aetiology, the various signs that may appear, and how to identify and approach it. Trainings and educational programmes on colic, causes and signs recognition is essential for horse handlers to support their decision making.

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Conflict of Interest

The authors declare that there is no conflict of interest.

Authors' Contributions

ABA, AJO and OEO contributed to the design, administration and analysis of questionnaires while ODO wrote the draft manuscript. All authors read and approved the final manuscript for publication.

REFERENCES

Adeyefa, C.A.O. and Hamblin, C. (1995). Continuing prevalence of African horse sickness in Nigeria. Rev. Elev. Med. Vet. Pays trop., 48: 31-33. doi:10.19182/REMVT.9483

Adeyefa, C.A.O. (1990). Equine Colic: A retrospective study of 23 cases over a 10-year period (1979-1989) in Ibadan. Zariya Vet., 5(1): 104-110.

Agina, O. A. and Ihedioha, J. I. (2017). Occurrence of Wounds in Nigerian Horses. J. Appl. Ani. Wel. Sci., 20(4), 372–380. doi:10.1080/10888705.2017.1343149

Anyanwu, M, U. Ugwu, I. C. and Onah, C.U. (2018). Occurrence and antibiogram of generic extendedspectrum cephalosporin-resistant and extended-spectrum β-lactamase-producing enterobacteria in horses. Mac. Vet. Rev., 41 (2): https://doi.org/10.2478/macvetrev-2018-0015

Archer, D.C. and Proudman, C.J. (2006). Epidemiological clues to preventing colic. Vet. J., 172: 29– 39. doi: 10.1016/j.tvjl.2005.04.002.

Bowden, A., Burford, J.H., Brennan, M. L., England, G.C.W. and Freeman, S.L. (2020). Horse owners' knowledge, and opinions on recognising colic in the horse. Equine Vet. J., 52 262–267. doi: 10.1111/evj.13173

Cook, V. L. and Hassel, D. M. (2014). Evaluation of the Colic in Horses. Veterinary Clinics of North America: Equine Practice, 30(2), 383–398. doi:10.1016/j.cveq.2014.04.001

Edeh, E. R. (2018). Equine colic, knowledge and practices of horse handlers in three local government areas in Kaduna State, Nigeria. A dissertation submitted to the school of postgraduate studies, Ahmadu Bello University, Zaria. http://hdl.handle.net/123456789/11769

Fogle, C.C., Oser, C.S., Troutman, T.P., McNamara, M., Williamson, A.P., Keller, M., McNamara, S., Helgerson, S.D., Gohdes, D. and Harwell, T.S. (2008). Public education strategies to increase awareness of stroke warning signs and the need to call 911. J. Public Health Manag. Pract. 14, 17–22. https://doi.org/10.1097/01.phh.0000316496.78282.47

Garba, U. M., Sackey, A. K. B., Tekdek, L. B., Agbede, R. I. S., and Bisalla, M. (2011). Clinical manifestations and prevalence of piroplasmosis in Nigerian royal horses. J. Vet. Adv., 1(1), 11–15.

Gitari, A. Nguhiu, J. Varma, V. and Mogoa, E. (2017). Occurrence, treatment protocols, and outcomes of colic in horses within Nairobi County, Kenya. Vet. World, 10(10), 1255–1263. https://doi.org/10.14202/vetworld.2017.1255-1263

Hillyer, M.H., Taylor, F.G.R. and French, N.P. (2001). A cross-sectional study of colic in horses on thoroughbred training premises in the British Isles in 1997. Equine Vet. J., 33(4): 380–385. https://doi.org/10.2746/042516401776249499.

Hillyer, M.H., Taylor, F.G. and Proudman, C.J. (2002). Case control study to identify risk factors for simple colonic obstruction and distension colic in horses. Equine Vet. J., 34: 455–463. doi: 10.2746/042516402776117746.

Hodgson, C., Lindsay, P. and Rubini, F. (2007). Can mass media influence emergency department visits for stroke? Stroke 38, 2115–2122. https://doi.org/10.1161/strokeaha.107.484071

Hudson, J.M., Cohen, N.D. and Gibbs, P.G. (2001). Feeding practices associated with colic in horses. J. Amer. Vet. Med. Asso., 219: 1419 –1425. doi: 10.2460/javma.2001.219.1419

Kahn, C.N. and Line, S. (2010). The Merck Veterinary Manual, (2010). 10th Ed Whitehouse station N. J., Merck and Co. pp. 2824-26.

Lyons, D.J and Carey.B .http://www.thehorse.com. [accessed 15 March 2017].

Mair, T. S., and Smith, L. J. (2010). Survival and complication rates in 300 horses undergoing surgical treatment of colic. Part 2: Short-term complications. Equine Vet. J., 37(4), 303–309. doi:10.2746/0425164054529364

Mayaki M.A., Mera Usman M., Talabi Adewale O. (2018). Prevalence and Associated Risk Factors of Equine Colic in Sokoto Metropolis, Nigeria. Vom J. Vet. Sci., 13(1): 44-51.

Mayaki, A.M. (2017). Retrospective study of equine cases at the Veterinary Teaching Hospital, Usmanu Danfodiyo University, Sokoto, Nigeria (2001 – 2015). Nig. Vet. J., 38: 208-214.

Mehdi S, Mohammad V. (2006). A farm-based prospective study of equine colic incidence and associated risk factors. J. Equine Vet. Sci., 26(4):171–4. https://doi.org/10.1016/j.jevs.2006.02.008

Olusa, T.A.O. and Akinrinmade, J.F. (2009). Dental abnormalities of polo horses in Nigeria. Trop. Vet., 27(3): 1-7. http://www.ajol.info/journal_index.ph...

Olusa, T.A.O. and Akinrinmade, J.F. (2014). Do dental abnormalities predispose horses to colic? J. Vet. Med. Ani. Health, 6(7): 192-197. https://doi.org/10.5897/JVMAH2014.0290

Omoniwa, D.O., Alaba, B.A., Okeke, R.O., Adanu, W.A., Kalang, J.J., Oladipo, O. O. and Adedokun, R.A.M. (2021). Enterolithiasis in a 15 Year Old Dongola Breed Stallion. J. Exp. Agri. Int., 43(5): 1-6. https://doi.org/10.9734/jeai/2021/v43i530683

Scantlebury, C.E., Perkins, E., Pinchbeck, G.L., Archer, D.C. and Christley, R.M. (2014). Could it be colic? Horse-owner decision making and practices in response to equine colic. BMC Vet. Res. 10, Suppl. 1. https://doi.org/10.1186/1746-6148-10-s1-s1

Tannahill, V.J., Cardwell, J.M., Witte, T.H. (2019). Colic in the British military working horse population: a retrospective analysis. Vet Rec.; 184(1):24. https://doi.org/10.1136/vr.104956