UNIVERSITI PUTRA MALAYSIA

RETROSPECTIVE STUDY ON EQUINE CASES REFERRED TO UNIVERSITY VETERINARY HOSPITAL (UVH), UNIVERSITI PUTRA MALAYSIA FROM YEAR 2013 TO 2017

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SERDANG, SELANGOR

2018

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AZIEMAH BINTI MOHAMAD ASHARAF

A project paper submitted to the

Faculty of Veterinary Medicine, Universiti Putra Malaysia

In partial fulfilment of the requirement for the

DEGREE OF DOCTOR OF VETERINARY MEDICINE

Universiti Putra Malaysia

Serdang, Selangor Darul Ehsan

MARCH, 2018

CERTIFICATION

It is hereby certified that we have read this project paper entitled "Retrospective Study on Equine Cases referred to University Veterinary Hospital (UVH), Universiti Putra Malaysia from year 2013 to 2017", by Aziemah binti Mohamad Asharaf and in our opinion it is satisfactory in terms of scope, quality, and presentation as partial fulfilment of the requirement for the course VPD 4999 – Final Year Project.

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DEDICATIONS

In the name of Allah, The Most Benevolent, The Most Merciful

Mostly dedicated to:

My family.

Love you guys so much.

ACKNOWLEDGEMENTS

Alhamdulillah, first and foremost I am very thankful to Allah SWT for giving me strength to carry out this study. I wish to express my deepest appreciation to my project supervisor, Dr. Noraniza Mohd Adzahan for her endless guidance, support and supervision throughout this project.

I wish a special appreciation to Dr. Mohd Shahrom Salisi for his suggestions and supports in for my project. UVH staffs, thank you for all the assistance throughout the project. A million thanks were also dedicated to all my friends especially Wan Amirul, Nazim Khan, Syafia, Dzulkifli, Ikhwan in helping me throughout this project.

Big thanks also directed to my beloved family for their warm support and unconditional love towards me. Last but not least to all my friends and course mates, thank you very much for all the support and I would cherish every moment.

CONTENTS

LIST OF ABBREVIATIONS

UVH	=	University Veterinary Hospital
UPM	=	Universiti Putra Malaysia
PDRM	=	Polis Di Raja Malaysia
DBKL	=	Dewan Bandaraya Kuala Lumpur
TEP	=	Taman Ekuestrian Putrajaya
DARC	=	Denai Alam Riding Club
MAFEC	=	Malaysian Armed Forces Equestrian Centre
MAEPS	=	Malaysia Agro Exposition Park

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ABSTRAK

Abstrak daripada projek yang dikemukakan kepada Fakulti Perubatan Veterinar untuk memenuhi sebahagian daripada keperluan kursus VPD 4999 – Projek Ilmiah Tahun Akhir

KAJIAN RETROSPEKTIF TERHADAP KES EKUIN DI HOSPITAL UNIVERSITI VETERINAR, UNIVERSITI PUTRA MALAYSIA DARI TAHUN 2013 HINGGA 2017

Oleh

Aziemah binti Mohamad Asharaf

MAC 2018

Supervisor: Dr. Noraniza Mohd. Adzahan

Peningkatan bilangan kes klinikal ekuin yang dilaporkan ke Hospital Universiti Veterinar, Universiti Putra Malaysia (UPM) telah dikenalpasti. Sehubungan itu, satu kajian retrospektif telah dijalankan untuk menentukan kelaziman dan jumlah kes yang telah dilaporkan Hospital Universiti Veterinar, UPM sepanjang lima tahun yang lalu serta mengenalpasti masalah klinikal yang berbeza dalam kuda dari pelbagai pertubuhan dengan kegunaan kuda dan pengurusan yang

berbeza berdasarkan hubungannya dengan kadar kejadian. Data kes klinikal ekuin yang telah dilaporkan ke Hospital Universiti Veterinar dari tahun Januari 2013 hingga Disember 2017 telah dikumpulkan dan direkodkan. Sejumlah 4,577 kes ekuin telah direkodkan dan dianalisa berdasarkan bilangan kes, pertubuhan kuda, jenis kerja dan masalah klinikal. Jumlah kes yang direkodkan termasuk kes ulangan pada tahun 2013 adalah 877 (19.16 %), pada tahun 2014 adalah 1,049 (22.92 %), pada tahun 2015 adalah 1,026 (22.42 %), pada tahun 2016 adalah 955 (20.86 %) dan pada tahun 2017 adalah 670 (14.64 %). Bilangan kes yang tertinggi yang dilaporkan melibatkan masalah otot (34.34 %), diikuti dengan kecederaan trauma (14.57 %) dan masalah pencernaan (10.23 %). Data yang dikumpulkan menyediakan sumber rujukan yang bermanfaat untuk mengenalpasti pengurusan kes oleh pemilik kuda.

Kata kunci: Kajian retrospektif, kes ekuin, tahun 2013 hingga 2017

ABSTRACT

An abstract from the project paper presented to the Faculty of Veterinary Medicine in the partial fulfilment of course VPD 4999 – Project

RETROSPECTIVE STUDY ON EQUINE CASES REFERRED TO UNIVERSITY VETERINARY HOSPITAL (UVH), UNIVERSITI PUTRA MALAYSIA FROM YEAR 2013 TO 2017

By

Aziemah binti Mohamad Asharaf

MARCH 2018

Supervisor: Dr. Noraniza Mohd. Adzahan

An increase number of equine clinical cases reported to the University Veterinary Hospital (UVH), Universiti Putra Malaysia (UPM) was observed. Therefore, a retrospective study was carried out in order to determine the prevalence of equine cases referred to UVH, UPM for the past five years as well as to identify different clinical problems in horses from different horse usage and management practice in relation to its occurrence rate. Data of equine clinical cases referred to UVH from year January 2013 to December 2017 were gathered and recorded. A total of 4,577 equine cases were recorded and analysed based on case number, horse

establishment, type of work and clinical problems. The total of cases recorded in year 2013 including revisit cases was 877 (19.16 %), year 2014 was 1,049 (22.92 %), year 2015 was 1,026 (22.42 %), year 2016 was 955 (20.86 %) and year 2017 was 670 (14.64 %). The highest cases reported involved the musculoskeletal (34.34 %), followed by traumatic injuries (14.57 %) and gastrointestinal tract problems (10.23 %). The data collected provide a valuable resource to investigate the post-operative management by horse owners.

Keywords: Retrospective study, equine cases, year 2013 to 2017

1.0 INTRODUCTION

1.1 Background of the study

Over the past few years, equine industry is growing in Malaysia especially by being one of the country that have hosted reputed international horse events including horse racing, endurance, polo and equestrian sports. This has not only developed the interest among the society to be involved in equine industry but also increase the number of imported and local horses in the country which are used for various purposes with various establishments.

Individual owners usually use their horses for leisure or joy rides, private club horse owners usually use the horses for riding schools and equestrian sports whereas government bodies usually use the horses for patrolling and ceremonial events. They will sometimes participate in equestrian events. Some of them also provide hippotherapy service for disabled people especially children.

In this country, equine disease are commonly related to musculoskeletal system, colic, upper respiratory tract infection and fly bite hypersensitivity which increase in the number of cases with more events being held throughout the year (Bashir A., 1993).

Equine clinical cases referred to UVH increase dramatically with the increase number of new clients as well as number of clinicians. This group of enthusiasts tend to buy horses to compete in events, which endurance racing being the most popular sports for the past few years till now. Unfortunately, these amateur

horse owners are still lacking with basic knowledge of managing and taking care of their horse particularly associated with health and injuries, leading to high recurrence rates of clinical problems with guarded prognosis due to improper post-operative management. As mentioned by Darmansah (2007), equine education is an important aspect in order to improve the equine industry in Malaysia.

1.2 Overall Objectives of the study

1. To determine the prevalence of equine cases referred to UVH, UPM from January 2013 to December 2017.
2. To identify different clinical problems in horses from different horse usage and management practice in relation to its occurrence rate.

1.3 Justification of the study

The number of equine cases referred to Universiy Veterinary Hospital, UPM increase with the increase number of new clients as well as veterinary officers attending equine cases. However, the total number of revisit cases is higher than the total number of new cases for horses from certain establishments in relation to different usage of horses and eventually suggestive of poor post-operative care of horses with clinical problems.

1.4 Hypotheses of the study

Ho: There is no significant difference in clinical problems in horses used for different purposes.

Ha: There is significant difference in clinical problems in horses used for different purposes.

2.0 LITERATURE REVIEW

2.1 Injuries in horses

Kick and bite injuries commonly occur in horses (Knubben, 2008). Besides kick from other horses, pasture can also be the aetiology agent for this problem (Derungs *et al.,* 2004). The kick injuries can be due to aggression or accidentally with exuberant behavior (Knubben, 2008). In free-ranging herd, injuries due to aggression is less likely to occur as the victim has enough space to avoid from the aggressor (Waring, 2003). Back kick is usually used as defence mechanism by horses when they feel threatened and when they are competing during foraging and mating whereas biting is an offensive behavior.

Trauma due to steel horseshoe will give a greater impact on the victim compared to barefoot horses (Piskoty *et al.,* 2005). In a study that has been carried out, among all the equine clinical case reported, 25 % was caused by injuries due to bite or kick from another horse, running into fences, poor footing, and self –trauma (Knubben , 2008). There were no specific location of the injuries, however most of the injuries will lead to lameness (Grogan and McDonnell, 2005). The cause of injuries is often associated with fighting during transportation and limited source of food and water in a herd (Gardin *et al.,* 1999).

2.2 Lameness and poor performance in sport horse

Lameness is one of the most frequent clinical problems seen in horses competing at low levels of dressage, show jumping and endurance where the causes are almost similar in all horses despite different purposes. The condition may worsen quickly if left undiagnosed and untreated as horses are most likely to make turns and circles rather than moving in straight lines. Both forelimbs and hindlimbs are at the same risks to be affected depending on the predisposing factors such as type of work, management and environment.

The most common cause of lameness is foot pain where by in forelimbs it causes imbalance, bruising and navicular disease, and low grade degenerative joint disease (DJD) especially at the metacarpophalangeal and interphalangeal joints. On the other hand, DJD of hindlimbs usually occurs at the distal hock joints.

Besides that, age and breed are also the predisposing factors for lameness. For example, young horses especially Warmblood horses that have just started working are at high risks of mild intermittent upward fixation of the patella or delayed release of the patella. New riders may be slower in detecting the gait abnormalities when riding a lame horse which is one of the reasons why lameness are usually diagnosed at later stage (Dyson, 2002).

According to FEI Endurance Report 2015, the endurance riding competition is growing not only in Malaysia, but the whole world from time to time. The horses that competed usually are eliminated because of two major

problems which are lameness and metabolic reasons (Burger and Dollinger, 1998; Langlois and Rober, 2008; Nagy *et al.,* 2014a, 2014b and Younes *et al.,* 2016).

2.3 Poor performance and back pain

Back pain is one of the most common cause of poor performance that have went undiagnosed as it is difficult to access. It is caused by soft tissue injuries associated with muscle damage and ligamentous strain which is seen in 25 % of horses with the complaint of back pain. Pressure from the inappropriate saddle-fitting will worsen the chronic muscle or ligamentous pain. Besides that, kissing-spine syndrome (KSS) is also the cause of back pain diagnosed in 30 % of the healthy horse population which is usually seen at the saddle-bearing area, between 12^{th} and 18^{th} vertebrae. Factors that caused KSS includes type and load of work related to the amount of back extension required (Jeffcott, 1980).

An increase in workload will increase in the extension of the spine. Although the saddle with the rider does not affect the gait of the horse, it will affect the conformation of the vertebral column where by an extended back will reduce the space between the spinous processes of the thoracolumbar vertebrae. This is because the horse tries to compensate the load for the extending effect by increasing the retraction of the forelimbs as the forelimbs bares 60 % of the total weight. These conditions will eventually lead to KSS resulting in back

pain. In most of the competition where the load is at the dorsal back region influences the posture during exercise. (Cocq *et al.,* 2004).

2.4 Skin disease in horses

Skin disease in horses is a common and potentially challenging clinical problem. There is lack of information pertaining skin disease in horses when compared with that in other companion animal species. However, both horse-specific and location-specific patterns are present, but these can often be confounded by other factors. There are many possible ways in which to organize skin diseases in horses.

Diagnosis can be challenging and depends on the clinical findings and history. Some diagnostic techniques such as skin scrapings, acetate tape impressions, hair plucking, fine-needle aspiration and biopsy can be done in order to diagnose skin problems. However, it is not frequently done. Skin disease in horses is relatively common and can occur for a wide range of different reasons. Many of the lesions appear similar clinically and frequently further diagnostic work is required. Dermatopathology in horses can be complex and developing a good relationship with an experienced dermatopathologist can be very valuable. Like disease in any other body system, good observational skill, good history taking and wise selection of biopsy material can aid in making the diagnosis more quickly and efficiently (Wobeser, 2105).

2.5 Gastrointestinal tract of performance horses

Domestication of horses has alter the normal feeding behavior in horses. There were some studies done suggesting that the competition horses are exposed to high risk of gastrointestinal disease (Archer and Proudman, 2006; Durham, 2009).

Colic is the second most important problem beside lameness in equine industry, which concerns almost all of the horse owners (Abutarbush *et al.,* 2005). Colic horses that are associated with severe gastric ulceration will developed the signs of pain like abdominal kicking, tail swishing, or inappetance (Bachmann *et al.,* 2003). Compared to non-athletics horses, horses that are trained for race has more than double risk of experiencing colic (Kaneene *et al.,* 1997; Tinker *et al.,* 1997). On the other hand, there are also studies that suggested different types of work done by the horses are not associated with the incidence of colic (Traub-Dargatz *et al.,* 2001). Instead, less physically active horses are at high risk of getting colic compared to racehorses (Kaneene *et al.,* 1997).

High level trained horses such as race and endurance horses are commonly seen with gastric ulceration (Malmkvist *et al.,* 2012) due to dehydration and electrolytes imbalance from prolong exercises that will result in gastrointestinal disturbances (Hillyer *et al.,* 2002). It is difficult to reach the final diagnosis without an exploratory laparotomy. However, it is not usually done due to poorer prognosis as compared to medical cases and it is not cost

effective. The post-operative treatment is much more higher compared to the case treated medically. Besides that, the survival rate for the horses that undergoes exploratory laparotomy range from 20 to 78.5 % (Abutarbush *et al.,* 2005).

3.0 MATERIALS AND METHODS

3.1 Data collection

3.1.1 Medical records

This study was conducted for four weeks where the case records from year January 2013 until December 2017 were gathered from the Large Animal Ward, University Veterinary Hospital, UPM. The details that were collected includes the case number of both new and revisit cases, horse identification, horse establishment as well as the clinical problems.

3.1.2 Interview

Extra information on the availability of clinicians on duty and dates of horse competitions and events from year January 2013 until December 2017 were gathered through verbal communication with equine clinicians. Some of the groomers were randomly picked and asked some questions on how they managed and treat the horses.

3.2 Data analysis

Gathered data were tabulated using Microsoft Excel 2013 according to year, month, case numbers, horse establishments, purpose of the horse and clinical problems. The clinical problems were subdivided according to general body system and specific clinical problems. The data was analysed by using descriptive statistics with the help of IBM SPSS version 24.0 (SPSS software for Windows, IBM Corp). The results were recorded according to year, month, horse establishment and type of problems.

4.0 RESULTS

4.1 Total number of cases in year January 2013 until December 2017

A total of 4,577 of equine clinical cases were referred to UVH, UPM from year 2013 until 2017. Total number of cases per year ranged from 670 (14.63 %) to 1,049 (22.92 %). The highest total number of cases was in year 2014 with 1,049 (22.9 %) cases, followed by year 2015 with 1,029 (22.42 %) cases and year 2016 with 955 (20.87 %) as shown in Table 4.1. The total number of cases increased dramatically in the first two years and eventually started to decline the following three years as illustrated in Figure 4.1.

Table 4.1 Total number of cases in year 2013 until 2017

Years	Number of cases		
	New	Revisit	Total (%)
2013	616	261	877 (19.16 %)
2014	676	373	1049 (22.92 %)
2015	558	468	1026 (22.42 %)
2016	575	380	955 (20.87 %)
2017	438	232	670 (14.63 %)

Figure 4.1 Total number of cases in year 2013 until 2017

4.2 Number of cases based on horse establishments

A total of 35 equine establishments were registered as UVH clients from year 2013 until 2017 as shown in Table 4.2. Twenty-one establishments were owned by private bodies which includes ARL Putrajaya, Ar-Raudhah Stable, AS Equestrian, BRBD Polo Ampang, Bukit Kiara Eco Resorts, Denai Alam Riding Club (DARC), Din Dengkil, El-Mina Stable, Gombak Horse Riding Club, Kelab Ekuin Melaka, MAFEC, Majlis Ekuin Malaysia (MEM), Penn Endurance Stable, PRESCO, Royal Terengganu Endurance Stable (RTES), Selangor Turf Club (STC), Teratak Naly's Eco Resorts, TSAB Perlis, Tun Dr Mahathir, Vista Polo and Equestrian Club, and individuals. Other clubs are owned by government bodies which includes DBKL Bandar Tun Razak, DBKL Bukit Kiara, DBKL Cheras, DBKL Titiwangsa, MAEPS

Stable, PDRM Bukit Kiara, PDRM Cheras, PDRM Putrajaya, Penjara Kajang and Perbadanan Putrajaya. Pusat Ekuin UPM and UVH stable is owned by UPM.

The percentage of cases reported by the government bodies from year 2013 to 2017 was 54 %. On the other hand, cases reported by the private bodies was 46 %. This showed that government bodies had higher number of cases reported compared to the private bodies.

The most cases referred to UVH is owned by PDRM Cheras with 780 (17.04 %) cases, followed by individual owners with 608 (13.28 %) cases and ARL Putrajaya with 503 (10.99 %) cases. Nevertheless, these figures did not reflect number of cases in relation to number of horses in that particular horse establishment.

Table 4.2 Number of cases based on horse establishments

OWNERS	NUMBER OF CASES
ARL Putrajaya	503 (10.99 %)
Ar-Raudhah Stable	252 (5.50 %)
AS Equestrian	15 (0.33 %)
BRBD Polo Ampang	37 (0.81 %)
Bukit Kiara Resorts	34 (0.74 %)
DBKL Bandar Tun Razak	142 (3.10 %)
DBKL Bukit Kiara	3 (0.06 %)
DBKL Cheras	11 (0.24 %)
DBKL Titiwangsa	320 (6.99 %)
Denai Alam Riding Club (DARC)	47 (1.03 %)
Din Dengkil	27 (0.59 %)
El-Mina Stable	37 (0.80 %)
Gombak Horse Riding Club	25 (0.55 %)
Individual	608 (13.28 %)
Kelab Ekuin Melaka	9 (0.20 %)
MAEPS Stable	43 (0.94 %)

MAFEC	25 (0.55 %)
Majlis Ekuin Malaysia (MEM)	5 (0.11 %)
PDRM Bukit Kiara	243 (5.31 %)
PDRM Cheras	780 (17.04 %)
PDRM Putrajaya	282 (6.16 %)
Penjara Kajang	9 (0.20 %)
Penn Endurance Stable	2 (0.04 %)
Perbadanan Putrajaya (PPJ)	172 (3.76 %)
PRESCO	9 (0.20 %)
Pusat Ekuin UPM	388 (8.48 %)
Royal Terengganu Endurance Stable (RTES)	246 (5.73 %)
Selangor Turf Club (STC)	14 (0.30 %)
Teratak Naly's Eco Resorts	16 (0.35 %)
TSAB Perlis	36 (0.79 %)
Tun Dr Mahathir	95 (2.08 %)
UTM Skudai	38 (0.83 %)
UUM Sintok	14 (0.31 %)
UVH, UPM	44 (0.96 %)
Vista Polo & Equestrian Club	46 (1.00 %)

4.3 Number of cases based on general clinical problems

There were 13 groups of general clinical problems based on different body systems and herd health program throughout year 2013 until 2017 as shown in Table 4.3 and Figure 4.2. The highest number of cases was associated with musculoskeletal problem with 1,572 (34.34 %) cases, followed by traumatic injuries with 667 (14.57 %) cases and gastrointestinal tract (GIT) problem with 468 (10.23 %). Ear, neurological and urinary problems were the groups with least number of cases with the total of 20 (0.44 %), 25 (0.55 %) and 15 (0.33 %) cases respectively.

Table 4.3 Number of cases based on general clinical problems

General Problems	Number of Cases
Ear	20 (0.44 %)
Eye	156 (3.41 %)
Gastrointestinal tract (GIT)	468 (10.23 %)
General	230 (5.03 %)
Herd Health Program (HHP)	445 (9.72 %)
Integument	429 (9.37 %)
Musculoskeletal	1572 (34.34 %)
Neurological	25 (0.55 %)
Reproduction	170 (3.71 %)
Respiratory	196 (4.28 %)
Systemic	184 (4.02 %)
Trauma	667 (14.57 %)
Urinary	15 (0.33 %)

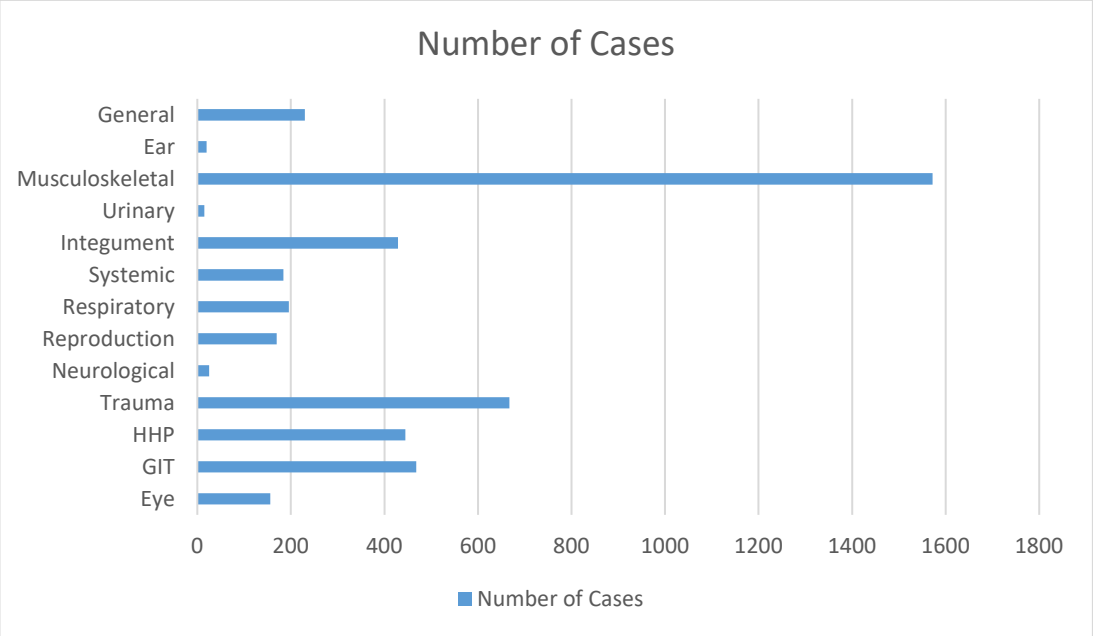

Figure 4.2 Number of cases based on general clinical problems

4.4 Number of cases based on specific clinical problems

As shown in Table 4.4, specific clinical problems shows distinct results compared to number of cases based on general clinical problems. A total of 30 different specific clinical problems were identified throughout the five years. The highest percentage of specific clinical problems was traumatic injuries with 667 (14.57 %) cases, followed by herd health program (HHP) with 445 (9.72 %) cases, non-specific musculoskeletal problems with 440 (9.61 %) cases, and colic with 406 (8.87 %). Cases of non-specific musculoskeletal problems were categorized based on lameness or other musculoskeletal ailments, which were treated symptomatically without further diagnosis.

The highest percentage of cases were associated with musculoskeletal problems indicating that it is the major clinical problems that have occurred throughout the five years. It is subdivided into nine groups where the highest percentage of cases was non-specific musculoskeletal problems subgroup with 440 (9.61 %) cases, followed by foot problems with 380 (8.30 %) cases, tendinitis or joint problem with 325 (7.10 %), lymphangitis with 196 (4.28 %) cases, back pain with 117 (2.56 %) cases, myositis with 35 (0.76 %) cases, fracture with 31 (0.68 %) cases, saddle sore with 28 (0.61 %), and cellulitis with 20 (0.44 %) cases. Cases categorized under non-specific musculoskeletal subgroup might be associated to the other specific subgroup. This is because further diagnostic work-up was not done and there were no final diagnosis for these cases. Statistically, there was significant difference in the occurrence of musculoskeletal problems in both government and private bodies as the $P = 0.00$ ($P < 0.05$). Hence, the null hypothesis was rejected.

The second major clinical problems was gastrointestinal tract problems which were subdivided into colic with 406 (8.87 %) cases and diarrhoea with 62 (1.35 %) cases. From Table 4.4, colic is the most frequent GIT problems that had occurred compared to diarrhoea with ratio of 406 : 62. Statistically, there was no significant difference in the occurrence of gastrointestinal problems in both government and private bodies as the $P = 0.31$ ($P < 0.05$). Hence, the null hypothesis was accepted.

The third major clinical problems was associated with integument which were subdivided into seven groups where hypersensitivity has the highest occurrence rate with149 (3.26 %) cases, followed by cutaneous myasis with 82 (1.79 %) cases, proud flesh with 80 (1.75 %) cases, habronemiasis with 64 (1.40 %) cases, dermatophilosis with 19 (0.42 %) cases, Queensland itch with 18 (0.39 %) cases, and dermatophytosis with 17 (0.37 %) cases. Statistically, there was no significant difference in the occurrence of integument problems in both government and private bodies as the $P = 0.94$ ($P < 0.05$). Hence, the null hypothesis was accepted.

Table 4.4 Number of cases based on specific clinical problems

Specific Problems	Number of cases (%)
Musculoskeletal problems	
Back pain	117 (2.56 %)
Cellulitis	20 (0.44 %)
Foot problem	380 (8.30 %)
Fracture	31 (0.68 %)
Lymphangitis	196 (4.28 %)
Myositis	35 (0.76 %)
Non-specific musculoskeletal problem	440 (9.61 %)
Saddle sore	28 (0.61 %)
Tendinitis / Joint problem	325 (7.10 %)
Gastrointestinal problems	
Colic	406 (8.87 %)
Diarrhea	62 (1.35 %)
Integument problems	
Cutaneous myasis	82 (1.79 %)
Dermatophilosis	19 (0.42 %)
Dermatophytosis	17 (0.37 %)
Habronemiasis	64 (1.40 %)
Hypersensitivity	149 (3.26 %)
Proud flesh	80 (1.75 %)
Queensland itch	18 (0.39 %)
Traumatic injury	667 (14.57 %)
Systemic problems	
Heat stress	13 (0.28 %)
Inappetance / Poor body condition	106 (2.32 %)
Pyrexia	13 (0.28 %)
Thumps / Metabolic	52 (1.14 %)
Respiratory problems	
COPD / Epistaxis	196 (4.28 %)
Urinary tract problems	
Urinary tract infection	15 (0.33 %)
Eye problems	
Eye	156 (3.41 %)
Neurological problems	
Wobbler	25 (0.55 %)
Ear problems	
Ear	20 (0.44 %)
Reproductive problems	
Reproductive	170 (3.71 %)
Others	
HHP	445 (9.72 %)
Miscellaneous	230 (5.03 %)

5.0 DISCUSSION

There were a total of 4,577 equine clinical cases recorded throughout the five years. The prevalence of equine cases from year 2013 to 2017 has no significant pattern. There were an increase in percentage of equine cases in 2014 with 1,049 (22.92 %) cases compared to 2013 with 877 (19.16 %) cases, and start to decrease from 2015 until 2017. These figures were associated with the number of events held throughout the five years where year 2014 has the highest number of event being held with 42 events, compared to year 2017 has the lowest number of events being held with 21 events. This is because most of the time same horses participate the competitions which were being held every month. This will give insufficient time for the horses to recover from previous event or competitions. Therefore, the occurrence of horse competitions and events were positively correlated to the number of cases presented to UVH.

There were a total of 35 establishments registered as UVH clients from year 2013 to 2017, where 21 of them were private bodies and 14 of them were government bodies. Private bodies use the horses for leisure or joy ride and riding school, while the government bodies use the horses for routine work such as patrolling and ceremonial events, and equestrian sports such as endurance, polo, show jumping and dressage. However, 2,472 (54 %) of the cases were reported from the government bodies, and 2,105 (46 %) of the cases were reported from private bodies. Hence, the government bodies has higher rate of occurrence of equine clinical cases compared to private bodies which were slightly low from the government bodies.

Based on general body system, musculoskeletal has the highest rate of occurrence with 1,572 (34.34 %) cases, followed by gastrointestinal problem with 468 (10.23 %) cases and skin problem with 429 (9.37 %) cases. Similar findings have been reported from previous study that lameness is the most diagnosed problem in equine practice, followed by gastrointestinal and skin problem (Bashir, 1993; Durham, 2009). In this country, although problems associated with musculoskeletal has the highest rate of occurrence, it does not cause motility as gastrointestinal problem is the major cause of death specifically due to colic.

Since musculoskeletal problem was the most common clinical conditions reported, it was subdivided based on specific musculoskeletal problems. Non-specific musculoskeletal problem has the highest rate of occurrence with 440 (9.61 %) cases, followed by foot problem with 380 (8.30 %) cases and tendonitis or joint problems with 325 (7.10 %) cases. Cases categorized in non-specific musculoskeletal problems were mild musculoskeletal problems that were treated symptomatically and there was no further diagnostic workout done. Hence, there was no final diagnosis for these cases. Second most common cases reported was foot problem because 60 % to 70 % of the horse body weight are bared by the foot. Some common cases that were reported to UVH were hoof crack, thrush, sole abscess, stone bruise and tendonitis. Statistically, the occurrence of musculoskeletal problems in government and private bodies has significant difference where private bodies has higher rate of occurrence compared to government bodies. This suggested that most of the riders in government bodies were professional compared to private bodies where the horses were mostly used for riding school to teach amateur riders. Besides that, horses in government bodies were used routinely, hence the level of fitness was

maintained. Most of the horses in private bodies were ex-race horses which were prone with injuries compared to government bodies where the horses were newly imported horses. Most of the horses were imported from Australia and Germany.

As in gastrointestinal problems, colic has the highest rate of occurrence with 406 (8.87 %) cases followed by diarrhoea with 62 (1.35 %) cases. Statistically, there were no significant difference in the occurrence of gastrointestinal problems where the number of cases in both government and private body had almost equal number of cases. This may be due to usage of same commercial diets. Hence, the occurrence of gastrointestinal problems were not associated with the work load, but it was associated to the occurrence of events and competitions.

As in skin problems, hypersensitivity has the highest rate of occurrence with 149 (3.26 %) cases, followed by cutaneous myiasis with 82 (1.79 %) cases and proud flesh with 80 (1.75 %) cases. Statistically, there were no significant difference in the occurrence of skin problems where the number of cases in both government and private body had almost equal number of cases. There was a study done by Banner in 2005 in temperate country that suggested higher risk for skin conditions was in summer season. However, Malaysia as the tropical country, the risk of skin conditions were throughout the year. This is because of the hot and humid weather throughout the year. This includes habronemiasis, Queensland itch and fungal infection of dermatophytosis or ring worm. Banner stated in his study that proud flesh and cutaneous myiasis were associated with post-operative management. This is because proud flesh and cutaneous myiasis aroused from a not treated and well maintained simple wound.

6.0 CONCLUSION AND RECOMMENDATIONS

From this study, it was concluded that the increase number of cases were associated with the increase population of horses in this country. However, there was a trend of occurrence of clinical problems in both types of establishments because of the work load. There was a positive relationship between the number of cases referred to UVH and occurrence of horse competitions and events which results in the incidence of clinical problems.

Further study on specific clinical problems especially musculoskeletal problems, skin problems and gastrointestinal problems should be done as those are the problems with the highest rate of occurrence since the introduction of equine industry in this country. It is important so that the horses are managed properly which could reduce the problems.

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