



## Retrospective analysis of cutaneous abscess in cattle, goats and pigs slaughtered at the Jos abattoir, Nigeria

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### Abstract

Food animals slaughtered in developing countries especially in Nigeria have shown prevalence of abscess which is linked to poor animal husbandry. This condition affects the performance of animals hence decreasing their productivity. Secondary data on abscess in cattle, goats and pigs were extracted from the Jos Abattoir record book for a period of five years. Five hundred and ninety-two (1.8%) animals from a total of 33,637 animals slaughtered had abscess. Pigs had more abscess (3.5%) than cattle (3.3%) and goats (1.4%), respectively. Yearly distribution of this condition revealed peak prevalence in all species in 2014.

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### Introduction

Animal husbandry in developing countries is characterized by poor animal management practices such as overcrowding, poor nutrition and grooming (FAO, 2011). This result in the buildup of stress which subsequently weakens the animal's immunity against infections hence exposing them to various disease conditions (Cosivi *et al.*, 1998). High prevalence of livestock diseases in most developing countries,

including Nigeria, is a major constraint to livestock production (Okoli, 2003). These conditions directly or indirectly lead to economic losses (Mesele *et al.*, 2012) as carcasses are partially or wholly condemned at the abattoir (Yesihak & Webb, 2015; Assefa *et al.*, 2017).

Abscess are known as local accumulation of pus in tissues or organs often accompanied by swelling

usually due to an infection. Abscess can be caused by bacteria (*Staphylococcus aureus*, *Streptococcus pyogenes*, *Klebsiella pneumoniae*, *Vibrio vulnificus* and *Salmonella spp*), parasites (*Schistosoma mansoni* and *Toxocara canis*) or foreign substances of which bacterial infection is the most common (Cox & Jeffrey, 2007). These pyogenic organisms gain entrance into body tissues by means of a small open wound on the skin, release their toxins which destroys intact cells and then elicit an acute inflammation at the site which is characterized by swelling, pain, redness and heat. The neutrophils that collect at the site also engage in lysis of dead tissues and phagocytosis of the organisms. Thick yellowish pus forms from the broken-down tissue which consist of an accumulation of dead or living bacteria, extracellular fluid and degenerate leucocytes. Grossly, an abscess appears firm, vary in size from 1 to 3 cm or even much larger, contains purulent exudate and may appear red and swollen. Abscess may be classified either as skin abscess or internal abscess in which internal organs such as the lungs, brain, kidneys, liver, mammary gland, tonsils, spleen and spinal cords are involved. Although skin abscess are common, internal abscess are more difficult to diagnose and more serious. The abattoir slaughter records provide valuable information of disease conditions in animals presented for slaughter especially in developing countries where modern diagnostic techniques for disease surveillance are not extensively utilized due to technical challenges (Mummed & Webb, 2015). Studies show that a wide range of disease conditions are diagnosed among animals slaughtered at Jos abattoir including tuberculosis (Oragwa *et al.*, 2017), haemoparasitic infections (Pam *et al.*, 2016), fascioliasis, fracture (Oziegbe *et al.*, 2017) amongst others. This study was therefore designed to estimate the prevalence of abscess in cattle, goats and pigs slaughtered at the Jos abattoir and further document the yearly trend in these animal species.

## Materials and Methods

### Study area

Jos is the capital city of Plateau State. The area is located in the North-Central geo-political zone of Nigeria and shares geographic boundaries with Bauchi, Kaduna, Nassarawa and Taraba States at its North-Eastern, North-Western, South-Western and South-Eastern boundaries respectively. The State is situated within the Guinea Savannah region of Nigeria and it is made up of seventeen Local Government Areas, covering an area of about 30,913km<sup>2</sup>. The average temperature ranges between 18°C and 22°C. There are two seasons within the year: dry (November-April) and rainy seasons (May-

September). The main occupation of the local indigenes is crop and animal farming.

### Data collection

Secondary data were collected from the Jos abattoir record files on cattle, goats and pigs with abscess from 2012-2016. The yearly slaughter figures were obtained from the monthly slaughter records held at the abattoir.

### Data analysis

The data collected were subjected to descriptive analysis involving the use of percentages to estimate the prevalence and trends of this condition over the study period using Microsoft Excel. Bar charts, line graphs and tables were used for presenting the data.

## Results and Discussion

A total of 33,637 cattle, goats and pigs were slaughtered during the five-year period (2012-2016) out of which 25,848 (76.8%) were cattle, 4,471 (13.3%) were goats and 3,318 (9.9%) were pigs. The total number of animals (cattle, goats and pigs) having the cutaneous abscess within the study period were 592(1.8%) (Table 1).

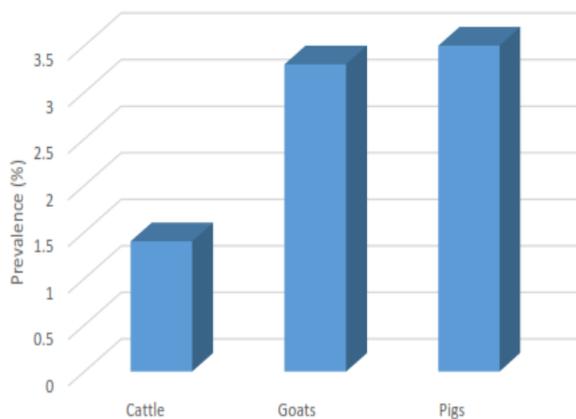
Species differences in the overall prevalence of the condition showed that pigs had the highest prevalence (3.5%) of abscess compared to cattle (3.3%) and goats (1.4%) during the five-year period. (Figure I).

All the species during the 5-year study period were observed to show peak prevalence (cattle 2.0%, goats 6.6% and pigs 7.4%) of cutaneous abscess in 2014 and lowest prevalence (cattle 0.4%, goats 0.6% and pigs 0.4%) in 2013. The trend of abscess in all the species during the study period showed a sharp decline in 2013 and a peak in 2014 with relatively moderate (cattle) to sharp (pigs and goats) decline in 2015 and 2016 (Figure II). A review of the Jos abattoir data on the overall records of cutaneous abscess in 33,637 cattle, goats and pigs slaughtered during the five-year period revealed a 1.8% prevalence. This finding is considered to be relatively lower compared to other abattoir data records in Nigeria and could be due to the fact that many slaughter activities are carried out in some illegal slaughter slabs where there is no meat inspection and government supervision (Alao & Sadiq, 2014). The slaughter men would prefer to take the obviously indisposed or ailing animals to such illegal slabs where there would be no risk of losing their meat to meat condemnation following systematic meat inspection. This would leave the abattoir with little record of animal diseases and abscess inclusive.

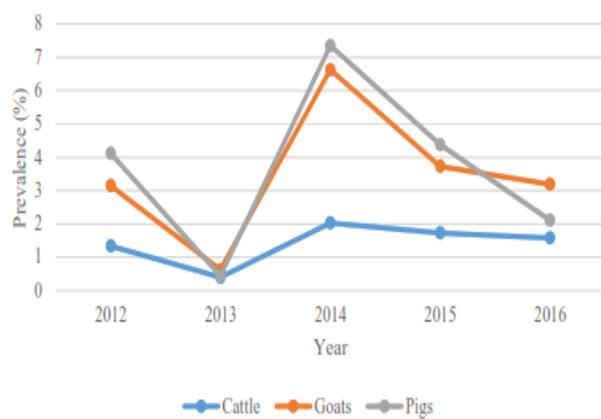
Across the years, the prevalence of abscess in cattle (2.0%), goats (6.6%) and pigs (7.4%) were at their

**Table 1:** Yearly prevalence of abscess in cattle, goats and pigs slaughtered at the Jos abattoir from 2012-2016

Year	Species	Total No. slaughtered	Abscess (n)	Prevalence of Abscess (%)
2012	Cattle	5,153	69	1.3
	Goats	984	6	0.6
	Pigs	679	28	4.1
2013	Cattle	6,302	25	0.4
	Goats	964	6	0.6
	Pigs	678	3	0.4
2014	Cattle	5,558	113	2.0
	Goats	769	51	6.6
	Pigs	626	46	7.3
2015	Cattle	4,405	76	1.7
	Goats	750	28	3.7
	Pigs	480	21	4.4
2016	Cattle	4,430	70	1.6
	Goats	1,004	32	3.2
	Pigs	855	18	2.1
Total	Cattle	25,848	353	1.4
	Goats	4,471	148	3.3
	Pigs	3,318	116	3.5
Grand Total		33,637	592	1.8



**Figure 1:** Overall Prevalence of Abscess in Cattle, Goats and Pigs Slaughtered at the Jos Abattoir from 2012-2016



**Figure 2:** Yearly trend of Abscess in Cattle, Goats and Pigs Slaughtered at the Jos Abattoir from 2012-2016

peaks in 2014 with lowest prevalence (0.4%, 0.6% and 0.4%) in 2013 in all species respectively. There are no clear reasons for the relatively high prevalence observed in 2014 but better veterinary services, awareness of stakeholders and more staffing of abattoir workers could be attributable factors. The peak prevalence of abscess in cattle is higher than the peak findings of Yesihak & Webb (2015) who reported a prevalence of 0.2% in 2010 in cattle at Ethiopia.

The overall prevalence of abscess in the study species, were 1.4%, 3.3% and 3.5% respectively for cattle, goats and pigs. Pigs were observed to have the highest prevalence. This could be associated with the injury sustained from poor handling and

management practices and such injuries could become infected, forming abscess. Abscess in goats (3.3%) was similar to the one-year (January - December, 1992) report (3.2%) of Ojo (1994) at Zaria slaughter houses, Nigeria.

In cattle, the prevalence of abscess (1.4%) was higher than the retrospective report (1.0% and 0.1%) of Alawa *et al.* (2011) in Zango abattoir, Zaria, Nigeria from 2000-2005. Similar studies outside Nigeria (Yesihak & Webb, 2015) in private abattoirs in Ethiopia from 2010-2013 has been reported with a prevalence of 0.06%. The findings (3.0% and 6.2%) of Sheferaw & Abdu (2017) in Kombolcha Elfora export abattoir, Ethiopia from 2008-2012 and Mesele *et al.* (2012) in Gondar, North West Ethiopia

respectively are higher than the findings of the study.

In conclusion, the present study revealed that cutaneous abscess are still problems among food animals slaughtered at the Jos Abattoir for human consumption although with low prevalence. Therefore, the need for improved husbandry practice by farmers and proper management of these animals before transporting to the abattoir for slaughter is important.

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#### Conflicts of Interest

The authors declare no conflicts of interest.

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