

Prevalence and herd-level risk factors for *Fasciola* spp and other trematode infections in cattle in Kwara State, North-Central Nigeria

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Implications The burden of *Fasciola* infection was found to be higher than in previous abattoir surveys, highlighting the importance of the parasite in Kwara State, Nigeria. Risk factors were identified that could be helpful in formulating control strategies.

Introduction Trematode infections of livestock are of global veterinary and public health importance and cause serious economic losses. Fasciolosis caused by *Fasciola gigantica* is estimated to cause an annual loss in cattle of up to US\$ 840M in Africa (Spithill *et al.*, 1999). Approximately 165 million cattle are likely to be infected with *Schistosoma* spp worldwide (De Bont *et al* 1994). The majority of data on the burden of *Fasciola* infection in Nigeria are based on abattoir surveys and there are few data on herd level risk factors. This study investigated the prevalence and herd level risk factors of trematode infections in cattle in Edu local government area, Kwara State, Nigeria.

Material and methods A cross sectional survey using a two-stage study design was carried out to investigate cattle within households. A total of 65 households were sampled from 11 villages. Two questionnaires were administered for household-level and individual cattle-level data. Faecal samples were obtained from the cattle, coprological analyses were carried out using the commercially available Fluke Finder® and trematode eggs identified microscopically. Cattle body condition scores were evaluated using a nine point scale (Nicholson and Butterworth, 1986). All locations were geo-referenced using a handheld GPS. Statistical analysis were carried out using Microsoft excel® and SPSS® version 21. Spatial analysis was also carried out using QGIS® software version 2.4.

Results Of 686 faecal samples analysed, 514 (74.9%), 110 (16.1%), 50 (7.3%) and 8 (1.2%) were positive for *Fasciola*, paramphistomes, *Dicrocoelium* and *Schistosoma* infections respectively. *Fasciola* had higher prevalence in adult cattle (77.3%) than those under 2 years of age (62.5%). One hundred (14.6%), 40 (5.8%) and 5 (0.7%) of the animals studied had a co-infections of *Fasciola* with paramphistome, *Dicrocoelium* and *Schistosoma* respectively. Male cattle had significantly higher body condition scores than females ($P=0.001$). Cattle in herd size greater than 100 were less likely to have *Fasciola* infections than those of smaller herds (odds ratio [OR] 0.28; 95% confidence interval [CI]: 0.14-0.58). While adult cattle (≥ 2 years) were more likely to be infected (OR 1.94; CI: 1.19-3.16) than younger cattle. Cattle belonging to household heads aged between 40-59 years were more likely to be infected with paramphistomes (OR 1.95; CI: 1.02-3.74) than those belonging to other age groups, while those belonging to the Zabaruma ethnic group were less likely infected (OR 0.05; CI: 0.01-0.22) than the Fulani or Zimbabwean farmers. Cattle in herds size greater than 100 were more likely to be infected with *Dicrocoelium* than those in smaller herds (OR 6.98; CI: 2.94-16.6), while those with body condition score greater than 7 were less likely to be infected (OR 0.01; CI: 0.03-0.49). Distribution maps of the prevalence of the various trematodes could be useful for investigation of possible associations between prevalence and intermediate snail host habitats such as watercourses.

Conclusion This study revealed a very high prevalence of *Fasciola* infection (74.9%) in Kwara state. This is considerably higher than the 22.5% prevalence rate reported in a previous abattoir study in the state capital (Adewole 2010). Risk factors identified in surveys such as this including herd size, cattle age and body condition score could assist in tailoring control strategies for various trematode infections to particular groups of farmers and cattle.

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