

**Prevalence and factors associated with brucellosis among febrile
patients attending Ijara District Hospital, Kenya**

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ABSTRACT

Brucellosis is a re-emerging zoonotic disease that causes more than half a million infections to humans every year. The disease is common in most developing countries although its prevalence often remains unreported due to low suspicion index by health workers and insufficient capacity to correctly diagnose the disease in humans. Rapid serologic kits are commonly used in human brucellosis diagnosis resulting to doubtful data due to false positives and negatives and thus little influence on policies in brucellosis control efforts.

In Sub-Saharan Africa, approximately 16% of livestock harbour the disease yet its treatment in animals is not recommended. Instead animals should be culled and this practice is not possible in the developing countries due to economic implications and poor compensation rates by the governments. This therefore has resulted to endemicity of the disease and continued source of infection to humans.

Although human mortality due to brucellosis is only about 2%, the disease causes severe disabling sequelae like rheumatism, infertility in males, spontaneous abortion and also results to wastage of resources through prolonged treatment, up to six weeks, and loss of income through loss of working hours. *Brucella* organisms are also considered potential biological weapon which could be cheaper to produce but more devastating than chemical weapons.

Even though animal brucellosis cases have been reported from Ijara District, prevalence of the disease in humans is unknown and the associated factors as well as the effectiveness of the Febrile Rapid Diagnostic Kit[®] have not been determined.

This hospital based cross sectional study was therefore carried out between December 2010 and January 2011 among 384 febrile patients aged 2 years and above with the objectives of

determining the prevalence and factors associated with brucellosis and also evaluation of the Febrile Rapid Diagnostic Kit[®] used at the facility.

About 5 millilitres of blood from each patient was drawn and analyzed by the Febrile Rapid Diagnostic Kit[®] and Polymerase chain reaction (PCR). Semi structured questionnaire administered to collect data. Epi- info version 3.5.1 was used for data analysis.

Seroprevalence of brucellosis was 31.8% and the true prevalence was 15.4% by PCR. Obtaining milk from the market (p value <0.00001, odds ratio 7.3, 95% confidence interval 2.5-21.1) and drinking of unboiled milk (p value <0.0001, odds ratio 8.5, 95% confidence interval, 4.2-17.3) were significantly associated with brucellosis. The sensitivity and specificity of the Febrile Rapid Diagnostic Kit[®] was 37 % and 69% respectively with a Predictive value positive of 18% and Predictive value negative of 86%. The level of agreement was 0.03.

The findings obtained from this study indicate that brucellosis is prevalent in about 1/6 of febrile patients attending Ijara District Hospital. Unprocessed milk from the market and consumption of unboiled milk were associated with brucellosis. Febrile Diagnostic rapid kit[®] underestimates positivity but overestimates prevalence of brucellosis in the febrile patients

Therefore, patients with brucellosis should be treated to prevent the devastating effect of the disease and the accompanying sequelae, public health education programs should explain modes of transmission (milk should be boiled before consumption) and Febrile Rapid Diagnostic kit[®] used at the facility should be replaced with better rapid diagnostic tests or PCR.