National Burden of Cystic echinococcosis in Tunisia: A Disability Adjusted Life–year Approach

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Background

Echinococcosis/hydatidosis caused by Echinococcus granulosus has a widespread distribution in Tunisia, particularly in the north-west and centre-west of the country.

Methods

As its economic consequences have not been studied yet in Tunisia, this study estimated cystic echinococcosis (CE) impact in terms of monetary losses, disability-adjusted life years (DALY), and DALY for zoonotic diseases (zDALY) in the entire country and in specific regions for the 2014 to 2019 period. The direct monetary losses were related to organ seizure from infected animal in slaughterhouses, and to healthcare expenses as well as lost wages for infected humans. Animal production losses concerned milk yield, fertility, carcass weight, and wool production. Losses due to human infection were also composed of disability and productivity losses at work. Monte Carlo simulations were used to estimate monetary losses and zDALY values.

Table 2. Percentage of animal product reduction caused by CE.

Parameter	Reduction rate (%)
Cattle	
Meat	2.5–10%
Milk	2.5–5%
Fertility	9.9–12.1%
Sheep	
Meat	5–20%
Wool	10–40%
Fertility	9.9–12.1%
Goats	
Meat	5–20%
Fertility	9.9–12.1%
Camels	
Meat	2.5–10%

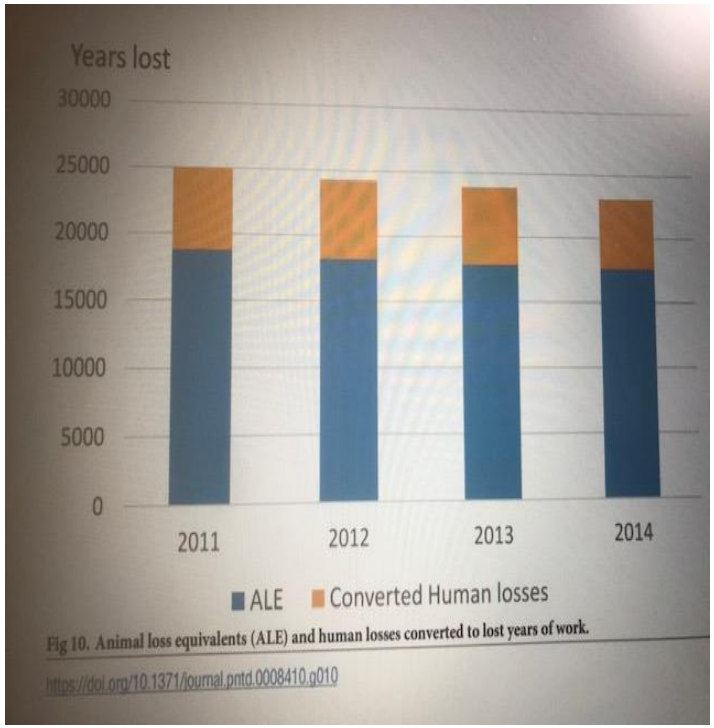

Fig 10. Animal loss equivalents (ALE) and human losses converted to lost years of work.

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Results

Nationwide, the estimated DALY was 0.7 years per 100,000 persons per year, and the zDALY was 57 years per 100,000 persons per year. Total yearly losses were estimated at 93 million USD (54–112 million USD).

Conclusion

Losses differed significantly among regions. Most of the economic losses consisted of unperceived consequences, i.e. decreased animal production and reduced productivity of asymptomatic individuals.

Future studies should determine the socioeconomic and epidemiological factors underlying the differences in economic losses among regions to develop better adapted control programmes