

Bionomics and dynamics of the intermediate hosts of *Schistosoma* in two villages of Menoufia Governorate, Egypt

Osama M. Awad*, Olfat El-Sebaie†, Mona H. Ahmed‡ and Magda Abd-El-Aty†

Abstract: This study was conducted to evaluate the prevalence and distribution of the intermediate host snails of schistosome and their relationship with various sanitary and environmental situations in the Nile Delta. Two villages; El-Kom El-Akhder and El-Roda in Menoufia Governorate, with almost the same population size and threaded by different irrigation canals and water streams were chosen. The former is provided with a sewage disposal system covering one-third of the houses, while the latter lacks a municipal disposal system, and most houses, particularly those on the canal banks, dispose of sewage and refuse into the canal. Twenty stations from each village representing different environmental sanitation situations were selected for sanitary survey, and snail and water examinations. The results showed that the most abundant snail in El-Kom El-Akhder village was *Bulinus truncatus* while in El-Roda village it was *Biomphalaria alexandrina* with significant seasonal variation of their population size. More environmental sanitation parameters were significantly correlated with snail population density [alive and dead] in El-Kom El-Akhder village than in El-Roda village. Principal components factor analysis grouped environmental sanitation parameters into 12 factors in El-Kom El-Akhder village and 13 factors in El-Roda village. Stepwise multiple linear regression analysis of the scores of these factors in relation to snail density showed that, parameters related to human excreta and domestic activities i.e. pollution parameters, in addition to water velocity were significantly negatively correlated with snail population. While presence of water vegetation and algal blooms of water streams were significantly positively correlated with it. However, salinity and other chemical, physical and biological environmental sanitation parameters were not significant or ignored. Environmental management procedures in addition to chemotherapy, health education and to lesser extent snail chemical control, should be applied under comprehensive integrated control programs to ensure the control of such disease and other related diseases.

INTRODUCTION

Throughout the twentieth century the major rural health problems in Egypt have been water-related.¹ Schistosomiasis is considered the most serious one, where 15-30% of the population are thought to be infected with either or both; *Schistosoma*

mansoni and *Schistosoma haematobium*

The former is more common in most areas of Nile Delta.² In Egypt, *Biomphalaria alexandrina* is the intermediate host for *S. mansoni* while *Bulinus truncatus* is the intermediate host for *S. haematobium*. Both are fresh water snails, abundant near human

Dept. of Tropical Health,* Dept. of Environmental Health,† Dept. of Biostatistics,‡ High Institute of Public Health, Alexandria University, Egypt