Dear Editor

Schistosomiasis is an infectious disease caused by trematode parasites of the genus *Schistosoma*. According to the World Health Organization (WHO), at least 206.5 million people required preventive treatment, of which more than 88 million people were reported to have been treated. Currently, three drugs are used for the treatment of schistosomiasis: praziquantel, metrifonate, and oxamniquine. All three have a history of success at the individual clinical level and in population or community-based chemotherapy. However, praziquantel remains the drug of choice in humans because of its high efficacy, low toxicity, and affordability. Currently, large-scale administration of praziquantel (PZQ) is the main measure for controlling schistosomiasis, as recommended by WHO focusing on morbidity control.

According to WHO, praziquantel is available in 600 mg tablets and must be administered orally in a single dose of 40 mg/kg of body weight after a meal. In some countries like Brazil, the Ministry of Health has its own guidelines. In this country, the praziquantel dose is given according to the age group: children up to 15 years old (60 mg/kg) and adults (50 mg/kg) of body weight. Determining the treatment dosage by body weight using scales in a global preventive program is considered problematic due to a substantial risk of technical and systematic measurement errors. In endemic areas, mainly in Africa, in order to facilitate treatment delivery, WHO recommends to administer praziquantel using a dose-pole, calculating the appropriate dosage by height instead of weight. Studies have shown that height assessment rather than weighing scale in the treatment of schistosomiasis using the dose pole is promising.

Thus, praziquantel must be administered between an acceptable dosage (30-60 mg/kg) and an ideal dosage (40-60 mg/kg). The under dosing of the drug could result in a partial or inadequate treatment, as much as an over dosage could result in side-effects such as abdominal pain, nausea and headache. The dose-pole use is based on the individual height and does not take into account individuals of the same height with different body weight. Baan et al. has shown, in African girls, that the use of the WHO pole dose is inaccurate in dosing the appropriate amount of praziquantel in overweight/obese girls. Thus, despite the dose-pole benefits particularly in a poor resource scenario, following a regimen of exposures to increasing amounts of PZQ, the development of a more accurate and straightforward method for calculating the optimal dose to reduce the error of weight-based treatment is urgently needed. Treatment performed in a large number of patients in areas where the drug is still administered based on weight, such as in Brazil, there is a grueling job of calculating adequate praziquantel dosing based on the individual’s weight. Thus, we present a mobile device-app called PraziCalc which facilitates and automatically calculates the optimal dosage of praziquantel based on the patient’s body weight, ensuring the effectiveness of treatment and the recommended dosage.

The app system

We have developed a mobile-device app to simplify the calculation of praziquantel dosage. The system is easy to use by any health worker, teacher,
community volunteer drug distributor and it only requires a mobile device (e.g. smartphone, tablet etc.). The app was created in 2017, it is free to all users, bilingual (English/Portuguese) and available for iOS and android operational systems. The app works as it follows: firstly, there is an initial screen where it is possible to choose if the drug will be administered according to the guidelines of the World Health Organization (WHO) or the Health Ministry of Brazil (step 1). According to WHO, praziquantel, which is available in 600 mg tablets, should be administered orally in a single dose of 40 mg/kg of body weight. In Brazil, the Ministry of Health has its own guideline. Praziquantel dosage is prescribed according to the age group (children up to 15 years old or adult - step 2) and body weight of the individual and administered orally in a single dose of 50 mg/kg for adults and 60 mg/kg for children after a meal. Subsequently, it is possible to entry the individual weight (step 3) and, through a calculation \( P \times D / 600 \), where \( P \) is the weight and \( D \) is the dosage in mg of the drug, the recommended amount of tablets that should be administered to each patient (step 4) is informed. Figure 1 summarizes the steps to use the PraziCalc app.

**CONCLUSIONS**

Through the use of this innovative mobile device-app, many benefits may occur for research in this area and for the infected population. Our purpose is to publicize and make the PraziCalc app accessible to any health center that treats the disease with praziquantel, facilitating the incorporation of this treatment process directed to patients with schistosomiasis in endemic areas, who need preventive chemotherapy, in medical clinics and in health centers. We believe this tool will assist the medical and fieldwork teams in presenting a more dynamic, faster and safe method to deliver praziquantel in the recommended dosage where the drug is still administered based on body weight.

**CONFLICT OF INTERESTS**

The authors have declared that no competing interests exist.

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