



INITIATIVES IN DE-WORMING: CURRENT TRENDS AND SIDDHA PERSPECTIVES

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ABSTRACT

More than a billion-people living in tropical and sub-tropical countries are currently infected with STH (Soil -transmitted helminths). Larger proportion of Pre-SAC and School children are affected by this infection leading to several morbidities leading to reduction of Physical, Mental growth increasing the economic burden in Developing countries, mostly South Asian. There is an urgent need to tackle the menace through safe, efficacious, universal approach. Siddha System can serve to treat the STHs through herbal medicines along with adequate sanitation measures undertaken at home and school premises.

Key words: STH, Soil -transmitted helminths, Siddha system.

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INTRODUCTION

Intestinal worm infections also called as Soil-transmitted helminths (STH) plague the developing and poor under-developed countries, taking a toll on the children's health and that of the reproductive women. These infections interfere with nutrient uptake and can lead to anaemia, malnourishment, chronic malabsorption, impaired mental and physical development. There is frequent absenteeism in school and work, locking horns with economic productivity in parts of the world that can least afford it. The main species involved are round worm (*Ascaris lumbricoides*), whipworm (*Trichuris trichiura*), hook worm (*Ancylostoma duodenale*) and schistosomes (Tchuem TA, 2011).

“More than 836 million children are at risk of parasitic infections worldwide. A significant body of evidence shows that deworming works to improve children's health, well-being, education, and long-term economic future.” (Anonymous 1&2) WHO PCT Databank: soil transmitted helminth infections. Out of the worms-infected children globally, 27% of them are school aged children in India requiring treatment for the problem (Kumar et al., 2014).

In Tamilnadu, 52.5% of rural Children aged 6-59 months are anaemic, whereas 56.9% of Non-pregnant women (15-49) years were anaemic. Most of the infected people live in rural areas of developed countries. STH infections are an important factor contributing to this age group. According to NHFS 4, households with improved sanitation facility was 69.7% in urban areas whereas 34% in rural areas of Tamilnadu (South India). Tamilnadu shares among the most ranking states in STH infection with more than 50% infected (Anonymous 3).

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Siddha system, associated with way of life, practiced in South India, enumerates practices for deworming which is to be outlined in this paper.

There is a definite need to identify safe practices of deworming which is adequately accessible, cost effective and efficacious for the rural population mostly among children and girls of reproductive age.

Initiatives by WHO:

WHO's Goal oriented motto is: to achieve coverage of 75% of world's pre-school aged children and school-aged children treated for intestinal parasitic worms and schistosomes by 2020 (Kumapley, 2015).

Studies have demonstrated early helminths infections can lead to organ damage that can remain subclinical without any symptoms and manifest later in adult life causing serious damages if not taken immediate action (Anonymous 4).

In 2016, more than 517 million children in need of chemo prevention for STH received de-worm pill corresponding to global coverage. WHO's control interventions include periodic anthelmintic (bi-annual treatment in endemic areas more than 50% infection), along with improvement in sanitation and health education among school children (Anonymous 5).

Other countries' efforts in Deworming

Countries like China, Bangladesh, Americas, East and West Africa has been successfully on the fore front in conducting mass deworming campaigns coupled with Vitamin A administration, schistosomiscidal treatment integrative school health programmes nevertheless India has been with the single Largest public-school health campaign conducted with mass administration of 270 million children treated on a single day during 2016 (Impact Evaluations, 2018).

Backlash of the Mass Deworming campaign

New Campbell review of the Cochrane's systematic review finds no or little evidence on community deworming. It was said that there was no consistent evidence for any effect on nutrition, cognitive performance or school performance, (Taylor Robinson et al) were at similar conclusions, implying that in addition to the deworm pill administration to the infected children, the uninfected children are also made to swallow the pill based on the Michael and Edward study that has failed the recent replication test done by independent researchers of London tropical medicine institute. This effect is far unknown until now.

Jumbo efforts by India

India, rated as one of the heavily burdened with 241 million children at risk for intestinal parasitic infections, has been solemnly committed to eradicate the menace through mass deworming school integrated

programmes (Anonymous 6). In February 2015, the Ministry of Health and Family Welfare (MoHFW) Government of India launched the National Deworming Day(NDD) as part of National Health Mission. After coverage of 89 million children on a single day (which is the world's largest public health campaign) at February 10th followed by a mop up day on 15 the February to cover the missed children. Children between the ages of 1 to 19 were given Albendazole 400 mg chewable tablet in Angan-wadis and schools with the help of 9 lakh teachers, Anganwadi workers and health workers (World's Largest Deworming Program in India To Start With Support from Evidence Action, 2018).

Periodical large-scale treatment treats low intensity of infection but on the long run adequate sanitation measures alongside creating awareness of healthy hygiene, measures for both parents and children gives better outcomes (Anonymous 7).

Sanitation Guidelines issued by Government of India:

- Adequate implementation of sanitation measures in schools to improve school attendance, physical, cognitive development of children.
- Washing hands before and after (using toilets) and eating,
- Wearing chappals/shoes while playing and walking,
- Keep nails short and clean,
- Clean fruits/vegetables under running water,
- Clean, properly cooked food,
- ODF – “open defecation free” is the phrase used in Community led total sanitation scheme (CLTS), provision of public and community toilets being done by the government of India to declare India ODF by October 2019 through the Swachh Bharat Turban (Anonymous 8).

History in Deworming

For much of our history, forages, plant parts or extracts have been used to combat worm infections, and in many parts of the world natural products are still in use as herbal remedies.

Ebers papyrus of the Egyptian medicine has spoken of worms and its treatment around 3500 years ago. Pomegranate (*Punica granatum*): Ebers papyrus define worms as “snakes of belly”, the high tannin content of fruits and roots were known to paralyse worms (The Ebers Papyrus. Most Famous Plant Medicine Encyclopedia of Ancient Egypt, 2018).

Some of the deworming practices followed since ancient times till proves efficacious and finds its way to the modern kitchens.

Garlic (*Allium sativum*): used exhaustively by Indians, Greeks, Chinese, Romans, Babylonians, for expelling intestinal worms, two cloves of garlic were kept under each foot in the shoe, when the person walked the cloves got crushed and garlic oil seeped into the blood

through skin (Nature Cures for the parasites and worms that infect humans, 2018).

Local indigenous people of India use *Daucus carota* (root tuber, seeds), leaves of *Azadirachta indica*, bark of *Punica granatum*, seeds of *Carica papaya*, fruit powder of *Areca catechu*, these claims are supported by adequate research studies and very effective when given in appropriate doses for both human consumption and domestic animal's use (Anonymous 9).

Villagers near northern state of Uttarakhand and Uganda (Africa) use *Cannabis sativa* preparations to treat intestinal worms (Deo A et al., 2012). Tribes of Bijagarh of West Nimar district, Madhya Pradesh use seeds of *Abrus precatorius*, *Aristolochia bracteata*, *Butea monosperma* seed powder for worm infestation.

Villagers in Sicily, use *Dryopteris filix-mas*, *Ruta chalepensis* both as external poultices for worms, sprig of rue (*R. Chalepensis*) is kept under child's pillow along with sacred incantations, prayers, magic spells to dispel worms from body.

Chinese used pumpkin seeds (also known as *nan guazi*) which has specific effect on inhibiting the

development of larvae, were crushed in mortar and given as decoction (The plants, rituals and spells that cured helminthiasis in Sicily, 2018).

In Ethiopia, Oromo people of Ghimbi district used decoction of *Glinus lotoides* for tapeworm infestation alongside *Zingiber officinale*.

Deworming in Siddha's perspective

Siddha system, the lifeline of Tamil Heritage practised since more than 5000 years since the origin of Tamilian race followed in Tamilnadu and parts of World. The literature consists of psalms sung by Siddhars, who renounced all worldly life seeking divine intuition in serving God through saving sick Mankind.

Jeeva Rakshamirtham, one siddha literature says there are about 20 types of parasites. Depending upon their place of inhabitation in the human body, they have been classified into 4 types. Among it, the Intestinal parasites have been identified as 5 types such as Kakerukam, Makerukam, Cavaracam, Culūnam and Lelikam (Noi IN, 2006).



Siddha Herbs used for Deworming

Table 1. In Balavagadam (Siddha treatise on Pediatrics), three types of intestinal parasites defined are:

Name of the worm	Comparable modern parasite	Siddha medicinal preparations used
Macaraipūcci	Giardia lamblia	ciṛupīlai ney/ nāyuruvi ney
Kīripūcci	Oxyuris vermicularis	īlanīr ney / muruṅkai kuṭinīr eṇṇey/ elicevi kuṭinīr
Nākapūcci	Ascaris lumbricoides	Nākapūcci kuṭinīr / pākal eṇṇey / puracamvitai kuṭinīr (Murugesu KS, 2006)

Table 2. Commonly used Herbal Anthelmintics in Siddha system of medicine

S.No.	Herb used	Method of Administration
1.	Pūṇṭu(<i>Allium sativum</i>)	Crushed juice of Pods – oral
2.	Karuṅcīrakam (<i>Nigella sativa</i>)	Powdered seeds - given at night followed by castor oil in the morning
3.	ōmam (<i>Trachyspermum ammi</i>)	Powdered fruit - given at night followed by castor oil in the morning
4.	palācu (<i>Butea monosperma</i>)	Powdered seed- given at night followed by castor oil in the morning Root powder.
5.	lavaṅkam (<i>Syzygium aromaticum</i>)	Flower bud – dried powder (As tablet)
6.	vāyvilāṅkam (<i>Embelia ribes</i>)	Powdered fruit
7.	vēppilai (<i>Azadirachta indica</i>)	Leaf, leaf shoots with honey
8.	akattikīrai (<i>Sesbania grandiflora</i>)	Decoction of green leaves
9.	kāṭṭucīrakam (<i>Vernonia anthelmintica</i>)	Seed powder
10.	akrōṭṭu (<i>Juglans regia</i>)	Walnut oil
11.	Pākal (<i>Momordica charantia</i>)	Ripe fruit
12.	kuppaimēṇi (<i>Acalypha indica</i>)	Leaf juice
13.	carakkonrai (<i>Cassia fistula</i>)	Leaf juice
14.	Nocci ver (<i>Morinda tinctoria</i>)	Decoction (Murugesu KS, 2006)

Siddhar guidelines for healthy and worm-free life [24]

1. Wash hands and oral gargle before and after eating.
2. Verse from Pathartha Guna Sinthamani says, “nīriṅai ccurukki mōriṅai pperukki neyyai urukki uṇpavar tam pēruarikkīṛ pōmē piṇi (Uthamaroyan KS, 2006), reiterating the need for drinking boiled water.
3. Taking laxative (mild purgative) once in 6 months and emetics (mild vomiting) once in 4months ((Uthamaroyan KS, 2006).
4. Usage of copper vessels for storing water, which is also confirmed by recent researches (Uthamaroyan KS, 2006).
5. Cleanliness of oral cavity through neem sticks (natural anthelmintic) (Uthamaroyan KS, 2006).
6. Traditional practices of stalacutti, pāttirapirakāram facilitates sanitation is essential before and during eating (Pathartha Guna Sinthamani, 2007).
7. The tiritōṭa cama poruṭkaḷ (special 8 condiments) added to the food during cooking facilitates anthelmintic as well as stomach-cleansing action. These are 8 in number and includes cardamomum, turmeric, cumin seeds, asafoetida, ginger, fennel, garlic and pepper. In addition to vermifuge (worm-killing) action these have carminative action helping in complete digestion and normal balance of enzyme system [30].
8. Contamination of food with worms termed as “acuci tōṭam” which is said to cause distaste, gastritis and diarrhoea (Noi IN, 2007) and is prevented by following stalacutti, pāttirapirakāram and tiritōṭa cama poruṭkaḷ (special 8 condiments).

CONCLUSION

In recent years, considerable progress has been made in the use of Geographical information system (GIS) and Remote Sensing (RS) to better understand helminth ecology and epidemiology, and to develop low-cost ways to identify target populations for treatment. Based on this, it was estimated that 89.9 million school-aged children were infected with one or more STH species in Africa in 2005. Use of GIS and Remote sensing technique identifying areas will readily underpin future research and control programmes – increasing human health and welfare in India.

In Thirumoolar Karukkadai book, the sage puts forth that the worm infestations of the uterine cavities are primarily responsible for infertility emphasizing that if correctly treated (expelling such worms) can lead to implantation of healthy baby. Neonatal and Maternal health is strongly favoured by healthy deworming coupled with proper adequate nutrition to counter problems of low birth weight, anaemia, infant and maternal morbidity and mortality. For almost two decades, children have been the focus to control morbidity due to STHs. Now after the “Bellagio declaration”, WHO aims for preventive chemotherapy to children, adolescent girls, women of reproductive age and pregnant women to decrease the worm burden in endemic areas.

Though there are several synthetic anthelmintics available, the search for sustainable, safe and herbal

alternatives to synthetics continues. Traditional Siddha medicine in predominant herbal forms offer a major and accessible source of healthcare in deworming.

Through this article, I would like to emphasize that totally shunning either conventional or traditional methods of deworming is not appreciative at this point. Instead, integration of traditional methods with conventional health care for treating intestinal parasites can go a long way in treating the intensity of the infestation and further prevention alongside sanitation measures appropriate to the

endemic countries of the world. By this the millennium goal 2020 of WHO can be achieved in eradicating the disease burden for the betterment of countries in social, health and economic arenas.

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CONFLICT OF INTEREST

No interest

REFERENCES

- Anonymous 1. <https://www.evidenceaction.org/dewormtheworld/>
- Anonymous 2. http://www.who.int/intestinal_worms/en/
- Anonymous 3. http://rchiips.org/NFHS/pdf/NFHS4/TN_FactSheet.pdf
- Anonymous 4. <http://www.ncbi.nlm.nih.gov/books/NBK11748/>
- Anonymous 5. <http://www.who.int/elena/titles/deworming/en/>
- Anonymous 6. <http://www.nddindia2016.com/about.html>
- Anonymous 7. http://www.who.int/neglected_diseases/news/270_million_children_treated_in_one_day/en/
- Anonymous 8. http://swachhbharaturban.gov.in/writereaddata/SBM_Guideline.pdf
- Anonymous 9. <http://nopr.niscair.res.in/bitstream/123456789/12034/1/IJTK%2010%283%29%20533-537.pdf>
- Anonymous 10. https://theory.yinyanghouse.com/theory/herbalmedicine/nan_gua_zi_tcm_herbal_database
- Deo A, Kulkarni DK, Kamble PB. EVM for Deworming in the ruminants for sustainable health. *Artic Case Stud Incl Sustain Growth Conf*, 2012.
- Impact Evaluations. International Initiative for Impact Evaluation | Evaluating Impact, Informing Policy, Improving Lives , 2018.
- Kumapley RS, Kupka R, Dalmiya N. The Role of Child Health Days in the Attainment of Global Deworming Coverage Targets among Preschool-Age Children. *PLoS Negl Trop Dis*, 9(11), 2015, 46.
- Kumar H, Jain K, Jain R. A study of prevalence of intestinal worm infestation and efficacy of anthelmintic drugs. *Med J Armed Forces India*, 70(2), 2014, 144–8.
- Medicinal plants used in traditional medicine by Oromo people, Ghimbi District, Southwest Ethiopia, 2018.
- Murugesha KS. Balavagadam, Chennai: Directorate of Indian Medicine & Homeopathy, 2006, 593-597.
- Murugesha KS. Gunapadam-mooligai, 2nd Ed. Re-print. Chennai: Directorate of Indian Medicine & Homeopathy, 2008.
- Nature Cures for the parasites and worms that infect humans, 2018.
- Noi IN. 1st Re-ed. Chennai: Directorate of Indian Medicine & Homeopathy, 2007, 270-288.
- Noi IN. Chennai: Directorate of Indian Medicine & Homeopathy, 2006, 314-315.
- Pathartha Guna Sinthamani 1st Re-ed. Chennai: Directorate of Indian Medicine & Homeopathy, 2007, 389
- Tchuem TA. Control of soil-transmitted helminths in sub-Saharan Africa: Diagnosis, drug efficacy concerns and challenges. *Acta Trop*, 120, 2011, 4–11.
- The Ebers Papyrus. Most Famous Plant Medicine Encyclopedia of Ancient Egypt, 2018.
- The plants, rituals and spells that cured helminthiasis in Sicily, 2018.
- Uthamaroyan KS. Siddha Maruthuvangachurukkam 2nd Re-ed. Chennai: Directorate of Indian Medicine & Homeopathy, 2006, 434-444.
- Uthamaroyan KS. Siddha Maruthuvangachurukkam 2nd Re-ed. Chennai: Directorate of Indian Medicine & Homeopathy, 2006, 321.
- World's Largest Deworming Program in India To Start With Support from Evidence Action, 2018.

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