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Helminths Deworming and Adverse Drug Effect in a Rural Population in Bayelsa State of Nigeria

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Helminths is endemic in Bayelsa State South-South region of Nigeria, with a population of 2.4 million people having eight local government areas with six being endemic in Schistosomiasis. life expectancy of 46 years, infant mortality of 62 per 1000 births and rural population having access to 34% portable water,40% rural population with access to sanitary system.Moreover, the rate of endemicity is <10% in the affected Ekeremor Local Government Area which prompted the study of Schistosomiasis infection amongst Norgbene Community Primary School 1 and 2: School age children SAC (5-14 years) as case study.However, 2748 enrolled School age Children (SAC) population of Norgbene community primary school of Ekeremor LGA were the targeted population while 1880 (SAC) was treated with 5264 tablets of Praziquantel using World Health Organization (WHO) standard dosages pole based on Height (m): more than 1.78m to 5 tablets, 1.60-1.77 m to 4 of tablets, 1.50-1.59 m to 3 tablets, 1.38-1.49 m to 2.5 tablets, 1.25 – 1.37 m - 2 tablets, 1.10 – 1.24 m 1.5 tablets, .94 – 1.09 m to 1 tablets, Less than 0.94 m-0 tablets while this research lasted for four weeks. Thus, 100 childrenout of 1880 population of school age children with 2748 enrolled yielding a percentage of 5.3% suffered from vomiting, tiredness, dizziness, nausea and headaches. Nonetheless, Schistosomiasis infectioncould be curtailed using Praziquantel drug, However, the adverse drug effectassociated to the use of Praziquantel would call for replacement with other drug with lesser adverse drug effect keyed with all feedback from clients' field claims.

Keywords:*SAC, AGE, CHILDREN, PRAZIQANTEL, NTDs, NEGLECTED, TROPICAL, DISEASES.*

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I. Introduction

Helminths deworming and adverse drug effect in underdeveloped world: Bayelsa State Nigeria(Pabalan et al., 2018; Welch et al., 2017), where there is no healthy public sanitary system practice having regular routine deworming being supported by the World Health Organization (WHO) has been a saving grace to eliminating and eradicating Tropical Diseases in the endemic areas of the country(World Health Organization, 2017). However, the use of preventive chemotherapy for the treatment of NTDs also has its side effects (Adriko, M. et al. 2018).

About ten to twenty percentage of persons living within helminths endemic communities of the world could be aggregated to fall between pre-school and School age children (Hotez, P. J. et al. 2006).Helminths infectionwould retardate the growth rate of children subtly by impairing mineral uptake,reducing metabolism resulting topoor physical growth and alertness.(Albonico, et al. 2008,Walson, et al.2012).Regular deworming of subjects living with HIV would reduce the progression to AIDs and treatment of Schistosoma haematobium would minimize the infected of unexplored persons to HIV infection, (Stothard, et al. 2014, Hotez, P. J. et al. 2008).

The use of Praziquantel in some part of endemic communities of sub-Sahara Africa (Nigeria and Egypt) for treatment of Schistosoma haematobium infection on school age children has been successfulwhile no follow-up has been made to ascertain the efficacy of the treatment rounds and to reduce the rate of adverse drug effects (Ojurongbe, et al. 2014)(Osakunor et al., 2018). Moreover, PZQ has been found not to be effective on

earlier stage of parasitic development of Schistosoma haematobium in human subjects (Ojurongbe, et al. 2014, Stothard, J et al. 2014).

The treatment of SAC and PSAC with PZQ would help to reduce the reoccurrence of the infestation of Schistosoma in endemic communities due to poor hygienic standard of these age group(Hoekstra et al., 2018), also the size and the PZQ dose pole would help to minimize the cost of weighting balance and inconveniences of carrying to every treatment site. (Stothard, J et al. 2018). However, it would be noted that helminths do not replicate in the human host but could influence the genomic development of HIV, malaria, and tuberculosis(Bowcutt & Wolff, 2016; Hürlimann et al., 2019; Mduluza et al., 2017), hence routine deworming before administration of medicines to persons having the big three killer diseases would help to reduce the progression to the AIDs and cancerous condition (Hotez, P. J. et al. (2008)(Assoum, 2019; Yegorov, 2018). Moreover, the infection of persons in underdeveloped world with human tapeworm and hookworm and the routine deworming with PZQ could result to some adverse drug effects(Anchang-Kimbi et al., 2017; Freer et al., 2018; MUTOMBO, 2017).We investigate the deworming and adverse drug effects in Norgbene Model primary school Ekeremor LGA.

II. Methodology

This research was carried out in the Norgbene model primary school Ekeremor LGA among School Age Children, The Study Area: Norgbene community is located in Oporomor1 ward 6 of Ekeremor LGA, it is a rural settlement with farmers and very few civil servants, the community lacks pipe borne water, electricity and standard social amenities, the major sources of water is via the stream (Nun creek) covered with macro algae where open defecation take place thus the village has unlimited usage of their creek. the World Health Organization (WHO) guidelines on the control of Schistotosomasis was used to perform this study (Toor, J. et al. 2018). Due to the Schistotosomasis endemicity profile of 10%≤50%at Ekeremor LGA which call for once treatment in two yearsSchool age children of model primary school ofNorgbene community were selected for this treatment. Calibrated Dose pole was used in the treatment graduated on walls of each class rooms where the SAC were taught, town announcer made a jiggle in the community via village radio emphasizing that school feeding will be made available for two weeks after proper advocacy and sensitizations to the community gate keepers and Primary School Head masters and teachers. A two-day training was conducted for the schoolteachers and community volunteers to assist in the Mass administration of medicine for Schistosomiasis.

III. Materials

Study design and period

In this study school based cross-sectional study design was employed. The research was conducted in Model primary school Norgbene from January to February 2017 in Oporomor I ward 6 of Ekeremor LGA.

Source and study population:

School age children were the source of population, all school age children, Dose poles, pencils, erasers, treatment registers, face masks, hand gloves, laboratory coat, counting tryetc, were available in the school in the period under treatment were administered the medicine via sample size determination and sampling technique.

Data collection method and instrument:

Data tools used were designed following the standard WHO and federal ministry of health field data tools for field mass administration of medicine and observation was collection via direct observation of children in the school after administration of Praziquantel follow-up were made in the community for more record of any delayed adverse drug events at home.

Data quality control:

In order to maintain data quality during the research period, classroom teachers were trained as volunteers for two days and during the implementation they were all involved in the monitoring of the implementation every harvested data was crosschecked after every dailywork and feedback made to the data entry volunteers.

Variables:

Dependent Variables

Age, numbers of males, numbers of females, total population in school enrolled, total children 5-14 years of age, number of males treated with PZQ and number of females treated with PZQ, number of PZQ received, number used, number lost, number expired and number remaining also early morning feeding before attending school or school feeding program practiced in the school then finally types of adverse drug events, total number of drug events number of cases referred to sick bay in the school compound.

Independent Variables:

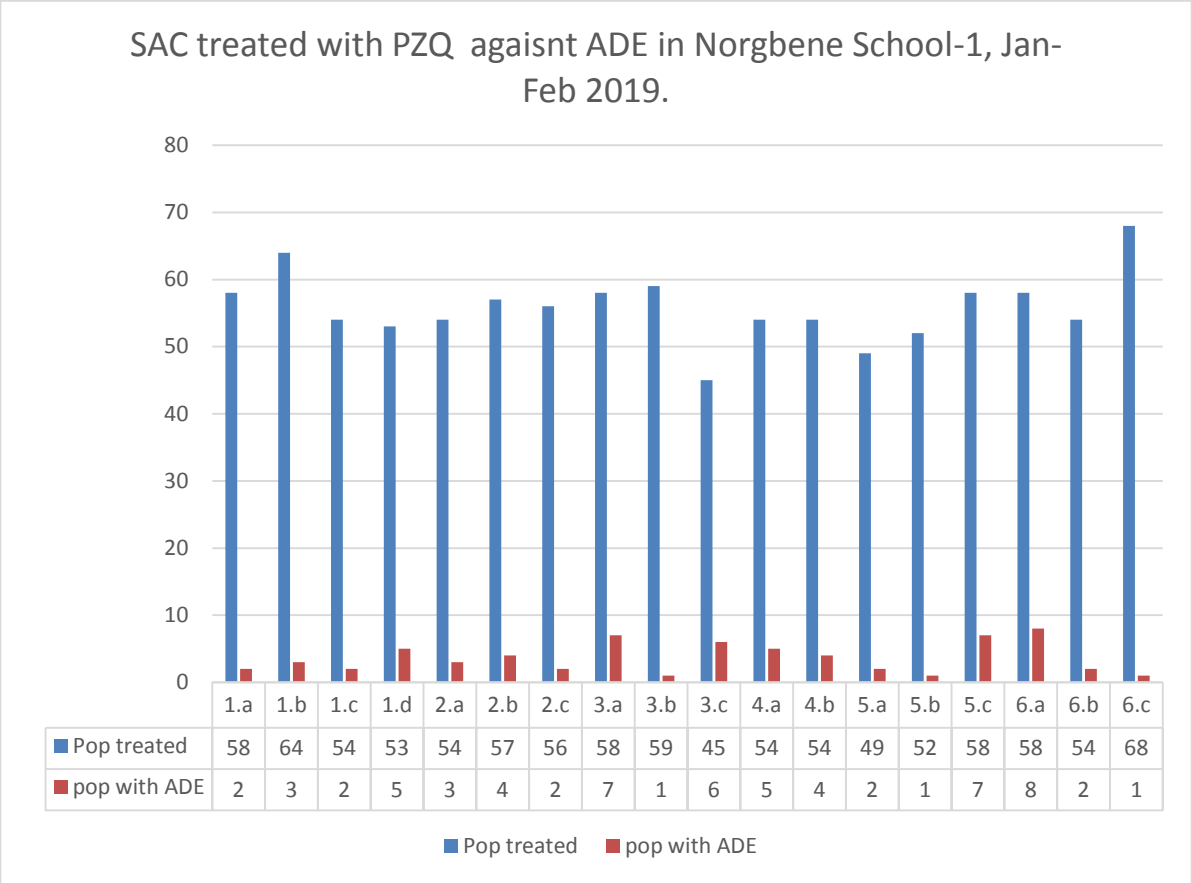
No ofarms of class, no of children 0-4 years of age, total number of 15 years and above, number of absentees' number refusals, and number that are sick also availability of hand wash facility in the school.

Data processing and analysis:
Data collected in the implementation was encoded to ensure the names of children were removed, cleared, treated and collected for any available errors using Microsoft excel and interpreted using tables and other summary illustration.

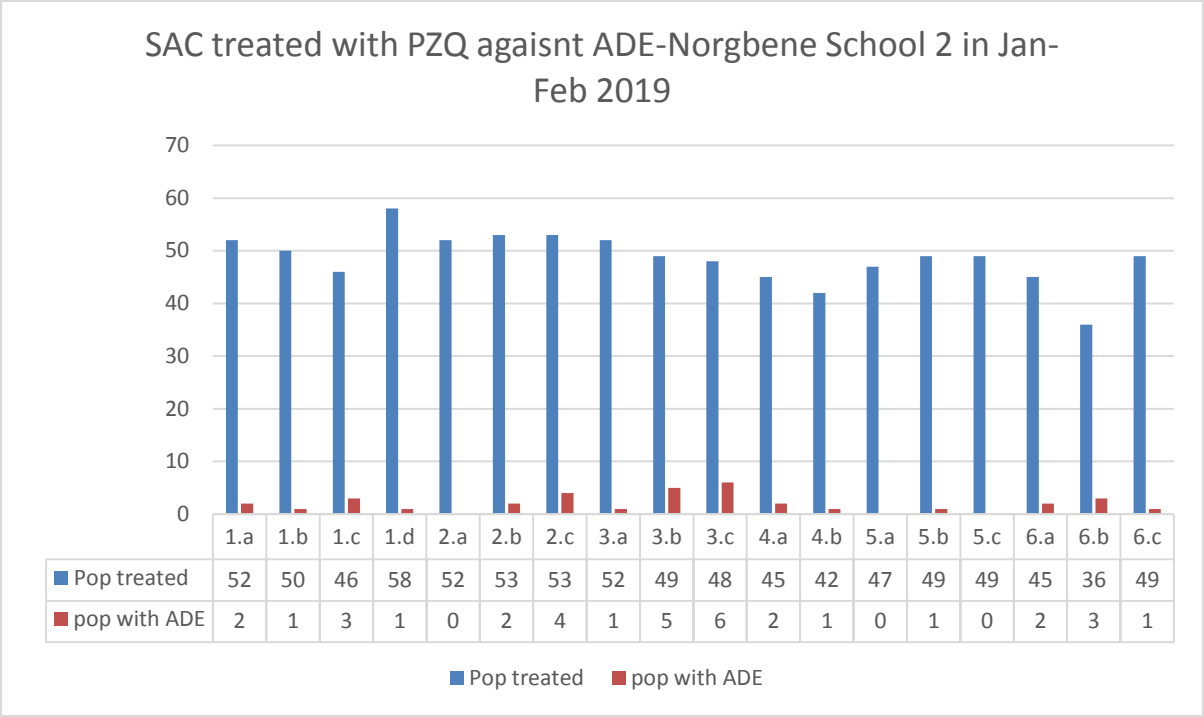
Ethical Consideration:
Ethical clearance was obtained from the Bayelsa State ministry of health and permission was taken from the community gate keepers and head master, classroom teachers and school children before and during implementation.

IV. Results:

SCHOOL 1						
Arm of Class	Total POP enrolled	Pop treated	No females treated	No Male treated	No PZQ used	pop with ADE
1.a	72	58	25	33	162	2
1.b	76	64	24	40	179	3
1.c	78	54	26	28	151	2
1.d	76	53	32	21	148	5
2.a	79	54	25	29	151	3
2.b	75	57	28	29	160	4
2.c	75	56	27	29	157	2
3.a	75	58	24	34	162	7
3.b	82	59	21	38	165	1
3.c	75	45	20	25	126	6
4.a	82	54	29	25	151	5
4.b	68	54	38	16	151	4
5.a	76	49	26	23	137	2
5.b	67	52	23	29	146	1
5.c	72	58	21	37	162	7
6.a	74	58	30	28	162	8
6.b	76	54	31	23	151	2
6.c	79	68	35	33	190	1
	1357	1005	485	520	2814	65



SCHOOL 2						
Arm of Class	Total POP enrolled	Pop treated	No females treated	No Male treated	No PZQ used	pop with ADE
1.a	83	52	22	30	146	2
1.b	76	50	24	26	140	1
1.c	76	46	23	23	129	3
1.d	66	58	24	34	162	1
2.a	76	52	15	37	146	0
2.b	82	53	24	29	148	2
2.c	82	53	26	27	148	4
3.a	84	52	19	33	146	1
3.b	79	49	19	30	137	5
3.c	80	48	18	30	134	6
4.a	85	45	17	28	126	2
4.b	84	42	25	17	118	1
5.a	75	47	24	23	132	0
5.b	86	49	29	20	137	1
5.c	58	49	28	21	137	0
6.a	68	45	23	22	126	2
6.b	75	36	24	12	101	3
6.c	76	49	28	21	137	1
	1391	875	412	463	2450	35



V. Discussions:

From the results displayed above school one had higher adverse drug effects than school two also class three rank highest in both schools. The mean of the ADE in school was 32.5 while in school was 17.5 thus the mode of ADE in school one is 2 while the mode of ADE in school two is 1, also the median of ADE in both schools was 2.

However, it was clear that ADE attributed to PZQin SAC as observed in Norgbene School 1 and School 2 recording 5.3% adverse drug event was significantly high even after advocacy and sensitization to the community gate keepers, schools' management, pupils and town announcing to parents and guidance to ensure their wards and children feed adequately before coming to school the following day and provisions of school feeding for the period of implementation.

Nonetheless:

It could be inferred from the research recorded above that the use of PZQ in the treatment of tape worm and other schistosomiasis infection would be put on temporary hold and give a trial to other drugs with less adverse drug event and cheaper to design and procure in the underdeveloped world.

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