



Prevalence and Determinants of the use of Enema in under-five children in Akwa Ibom State

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Abstract

Background: Use of enema in children across clinical and community settings are associated with risks. This study seeks to determine the prevalence of enema practice in under-five children, substances used as enema and the reasons for enema practice by mothers.

Materials and Methods: This was a descriptive cross sectional study among 252 consecutively recruited mothers of under-five children attending immunization/well babies clinics in 2 health centres in Akwa Ibom state using a semi-structured self and interviewer administered questionnaire for data collection. Data were analyzed using Statistical Package for Social Sciences (SPSS) version 17.0 at a level of significance of $P < 0.05$.

Results: One hundred and sixty-nine (67.1%) respondents had ever given enema to their children. Mothers (69.2%) administered enema to their children which most often (72.8%) was recommended to them by others. Herbal enema was preferred to chemical and plain water enema. Common reasons for enema administration were in preparation for administration of antimalarial to ensure its effectiveness (60.4%), to relief constipation (49.7%) and abdominal pains (46.7%) and treatment of fevers (41.4%). Predictors of enema practice were age of the child (OR 0.4, 95% CI 0.212-0.765, $p = 0.005$) and ethnic origin of the mothers (OR 9.4, 95% CI 4.024-22.104, $p < 0.001$).

Conclusion: The practice of enema is common in the study area. Health practitioners should be aware of this practice in the communities, seek for this history during clinical consultation and make concerted effort in educating the mothers and other caregivers against this practice.

Keywords: Enema, under-fives, Mothers, Akwa Ibom

Introduction

The use of enema has been an age long practice across the clinical and community settings. In clinical practice, the beneficial uses of enema include but not limited to; the administration of food and medicine, cleansing of the bowel before

radiologic procedures, management of constipation and encopresis in children and others.¹ In treating chronic constipation, enemas are often necessary. Phosphate enemas, saline solutions enemas, or mineral enemas are used in such situations.²⁻⁵ However, children often do not tolerate enemas because of the discomfort of placement as well as the associated abdominal pain and cramping due to pulsatile contractions hence, enemas can be traumatic for children.⁶ In traditional African communities, enemas are widely used for different reasons in children. Some use it to treat meconium in newborns, to cleanse mothers and their babies

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from evil spirits, to promote health and remove bad intestinal content, to wash out black stool of infants which is thought to be harmful, to ensure a child passes regular and adequate stool and even as a universal remedy for almost every and any symptom in infancy and childhood especially if other treatments fail. In the treatment of constipation, abdominal pain, respiratory infections, depressed fontanelle and even diarrhea, enema is also used.⁷

The practice of enema varies in different settings. While as much as 80.6% was reported in a south African setting,⁷ regular use of enema was reported by 63% of black patients in Johannesburg,⁸ and traditional medicine was administered rectally to 89% of babies under five months of age in Kwazulu-Natal.⁹ A history of enema abuse of 2.6% was reported in a study in Calabar.¹⁰

This practice whether in clinical or community settings is not without its associated complications. Metabolic derangements in serum phosphate, magnesium, sodium, calcium and potassium with the use of sodium phosphate, magnesium phosphate enemas have been reported.^{1,11-13} Hyponatremia, hypokalemia, hypernatraemia, hyperkalaemia and acidosis were the main associated electrolytes abnormalities reported in a study in Calabar.¹⁰ Transient bacteraemia,^{14,15} colonic perforation,^{16,17} allergic and anaphylactoid reactions¹⁴⁻¹⁷ and even death in children from these complications have also been observed with use of enema.⁷

In spite of the health concerns and risk associated with enemas, its use continues in many communities. This work aims to determine the true practice situation among mothers in Akwa Ibom State while analyzing the various substances used as enema as well as the possible reasons for the practice.

Materials and methods

The study was carried out in Akwa Ibom State, an oil explored southern state in Nigeria. The State has three (3) senatorial districts one of which is Uyo district with nine local government areas. Uyo is also the capital city of Akwa Ibom State.

Two health centres were purposively selected from two of the nine local government areas (LGAs) in Uyo senatorial district namely; the Health Clinic in the Department of Community Health of the University of Uyo Teaching Hospital and a health

centre at West Itam, in Itu LGA. A cross sectional study was designed to investigate the factors of interest (age and gender of the child, mothers age, level of education, place of delivery in the last pregnancy, ethnic group of the mother and place where child was immunized) and study outcome (prevalence and determinants of enema) in a representative sample from the study locations. The study population was mothers of under-five children who consecutively attended the immunization/well babies' clinics in the selected health centres until the minimum sample size was obtained.

The sample size was determined using the formula for determining sample size for cross sectional studies, $n = Z^2 pq/d^2$ by substituting, p of 80.6% being the prevalence of enema practice by mothers in a previous study in South Africa⁷ and a 5% none response rate to obtain a sample size of 252. A code was indicated on the child health card presented by mothers already recruited to avoid double recruitment. Data collection spanned three weeks from 08th to 29th July, 2015.

Data was collected using a structured and pre-tested questionnaire which was both self and interviewer administered. The language of administration was English, where the mother was unable to communicate in English, the local dialect was used by data collectors who were previously trained on the objectives of the study. In anticipation, the questionnaire had been translated in the local dialect and back translated to ensure that expressions were used uniformly. Data collectors practiced administration in both languages during the pre-test. Statistical Package for Social Sciences (SPSS) version 17.0 statistical software was used to analyse data. Descriptive statistics performed for continuous variables included means and standard deviation. Associations between the outcome variable and categorical variables were evaluated with Pearson's chi-square test. Binary logistic regression analysis was used to determine independent predictors of enema practice. Statistical significance was assumed when $p < 0.05$.

Approval to conduct the research was obtained from the Ethical Review Committee of the University of Uyo Teaching Hospital while individual informed consent was obtained from the mothers. Confidentiality was maintained throughout the conduct of the study.

Results

One hundred and fifty-eight (62.7%) of the children were aged between 12 to 59 months. One hundred and thirty-eight (54.8%) were males. The mean age of mothers was 28.35±5.4 years and one hundred and forty (55.6%) were less than 30 years. Many (73%) of the mothers had their last delivery in a health facility and two hundred and twenty-three (92.5%) were married. Most (84.9%) respondents were indigenes of Akwa Ibom state and two hundred and twenty (87.3%) had completed their secondary and post-secondary education (table 1).

One hundred and sixty-nine (67.1%) respondents had ever given enema to their children and of this number, one hundred and seventeen (69.2%) of the mothers actually administered the enema to their children while 52 (30.8%) of the enema was administered by others including paternal but most often maternal grandmothers. Forty-six (27.2%) mothers recommended giving the enema to their children while one hundred and twenty three (72.8%) other people especially maternal grandmothers recommended the enema to the mothers to give their children. For those who had ever given enema to their children, one hundred and sixty (94.7%) gave the enema early in the morning. Respondents gave enema between 1 to 15 times to

their children in a year with a mean frequency of administration of four. Herbal preparations were the commonest substances used. These included water leaf water 79 (46.7%) and bitter-leaf water 45 (27.8%). Plain lukewarm water was the second common substance given as enema. Lukewarm water with chloroxyleneol (Dettol) 14 (8.3%) and lukewarm water with soap 17 (10.1%) were also used (table 2).

The five top reasons for administering enema to children were: preparations of the body before the administration of antimalarials (60.4%), to enable a child pass stool freely (49.7%), relief of abdominal pains (46.7%), treatment of fever (41.4%) and to improve appetite (24.3%). Mothers also give enema to treat surgical conditions like hernia (0.6%), treat diarrhoea (8.9%), clear meconium stools in neonates (8.3%) and to make a child who delayed walking to start walking (5.9%) (table 3). Most often (92.9%), enema was administered using a rubber bulb syringe with removable nozzle (figure 1).

The practice of enema was significantly associated with place of delivery ($p=0.004$), point of receiving immunization ($p=0.014$), Childs' age ($p=0.004$) and mothers' ethnic group ($p<0.001$) At multivariate binary logistic regression level, children less than 12 months were significantly less likely to receive

Table 1. Socio demographic Characteristics of Mothers and the Children (n=252)

Childs' Age (months)		
0-11	94	37.3
12 months to < 5 years	158	62.7
Childs' gender		
Male	138	54.8
Female	114	45.2
Mothers' Age group (years)		
<30	140	55.6
30 and above	112	44.4
Mean +/-Standard deviation= 28.35±5.4		
Place of Delivery		
Facility Based	184	73.0
Non-Facility Based	68	27.0
Marital Status		
Single/widowed	19	7.5
Married	233	92.5
Mothers' Ethnic Group		
Ibibio/Annang/Oron	214	84.9
Ethnic groups outside Akwa Ibom	38	15.1
Mothers' Level of Education		
None/Primary Education	32	12.7
Secondary and Post-secondary	220	87.3

Table 2: Practice of Enema among Mothers attending immunization clinics in selected health facilities

Variables	Frequency	Percent
Ever Given Enema		
Yes	169	67.1
No	83	32.9
Who administered the Enema (n=169)		
Mother	117	69.2
Others	52	30.8
Who Recommends Enema (n=169)		
Mother	46	27.2
Others	123	72.8
Best Time of Administration of enema (n=169)		
Early morning	160	94.7
Anytime of the day	5	3.0
Evening	4	2.4
Afternoon	1	0.6
Frequency of Administration of enema in a year		
Mean = 4		
Range (1 to 15 times)		
Substances given as enema *		
Plain Lukewarm water	95	56.2
Herbal enema	182	107.7
¹ Water leaf+ water	79	46.7
² Bitter leaf ++water	47	27.8
³ Other herbs	45	26.6
⁴ Roots	11	6.5
Water and salt	13	7.7
Luke warm water with chloroxyleneol (Dettol)	14	8.3
Luke warm water with red/green soap	17	10.1

*Multiple responses allowed;+Talinum triangulare = ++= vernonia amygdalina,
Herbal preparation=1,2,3 and 4

Table 3: Reasons for the practice of enema among respondents

Reasons	Frequency	Percent
Before treating Malaria	102	60.4
To pass stool freely	84	49.7
To relief abdominal pains	79	46.7
To treat fevers	70	41.4
To improve appetite	41	24.3
To treat measles	20	11.8
To stop vomiting	19	11.2
To cure skin infections (dermatitis)	17	10.1
To treat diarrhea	15	8.9
To cure cough	14	8.3
To clear meconium stool	14	8.3
To make a child walk	10	5.9
To clean dirty 'stomach'	2	1.2
To prevent evil spirit	1	0.6
To treat scrotal hernia	1	0.6
To treat convulsion	1	0.6
Given to children after eating sweet things	1	0.6
To clear worms	1	0.6

*Multiple responses allowed

Table 4: Association Between selected characteristics and the practice of enema by Mothers in Akwa Ibom State

Characteristics	Practice of Enema		Total n=252	Statistical tests and Values
	Yes n(%)	No n (%)		
Place of Delivery of last child				$\chi^2 = 8.051$
Facility Based	114 (62.0)	70 (38.0)	184 (73.0)	DF=1
Non-Facility Based	55 (80.9)	13 (19.1)	68 (27.0)	P= 0.004*
Immunization point				$\chi^2 = 6.732$
UUTH	44 (55.7)	35 (44.3)	79 (31.3)	DF=1
PHC West Itam	125 (72.3)	48 (27.7)	173 (68.7)	P= 0.014*
Child's Age (in months)				$\chi^2 =8.981$
Less than 12	49 (55.1)	40(44.9)	89 (35.3)	DF=1
12-59	120 (73.6)	43 (26.4)	163 (64.7)	P= 0.003*
Mothers Age group (in years)				$\chi^2 =0.324$
Less than 30	96 (68.6)	44 (31.4)	140 (55.6)	DF=1
30 years and above	73 (65.2)	39 (34.8)	112 (44.4)	P= 0.569
Marital status				$\chi^2 =0.017$
Single /widow	13 (68.4)	6 (31.6)	19 (7.5)	DF=1
Married	156 (67.0)	77 (33.0)	233 (92.5)	P= 0.89
Ethnic Groups				$\chi^2 = 38.122$
Indigenes(Ibibio/Annang/Oron)	160 (74.8)	54 (25.2)	214 (84.9)	DF=1
Non Akwa Ibom Indigenes	9 (23.7)	29 (76.3)	38 (15.1)	P< 0.001*
Child's gender				$\chi^2 = 0.174$
Male	91 (65.9)	47 (34.1)	138 (54.8)	DF =1
Female	78 (68.4)	36 (31.6)	114 (45.2)	P= 0.689
Mothers educational level				$\chi^2 =2.030$
None/primary education	25 (78.1)	7 (21.9)	32 (12.7)	DF 1
Secondary and tertiary	144 (65.5)	76 (34.5)	220 (87.3)	P= 0.154

DF=Degree of freedom * significant P value

Table 5: Predictors of Enema Practice using Binary Logistic regression Models

Variables	Multivariate Models Odds ratio (95% CI) p-value
Child's age (in months)	
12-59	1
<12 months	0.4 (0.212-0.765) 0.005*
Mothers' Ethnic Groups	
Non Indigenes	1
Indigenes	9.4 (4.024-22.104 <0.001 *
Place of Delivery of last child	
None Health Facility	1
Health facility	0.6 (0.284-1.227) 0.16
Mothers educational level	
None/Primary education	1
Secondary and post secondary education	1.4 (0.476-3.954) 0.56
Immunization Point	
UUTH	1
PHC West Itam	0.8 (0.404 -1.588) 0.53

*significant P value

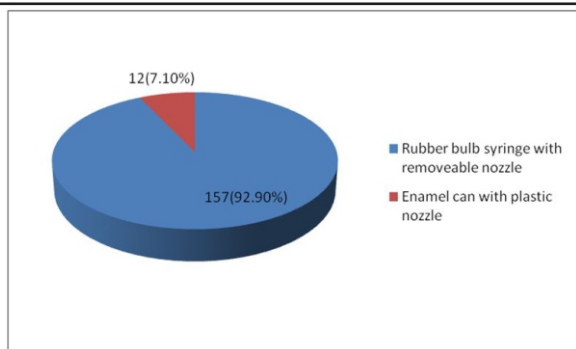


Figure I: Devices used for administration of Enema

enema compared to children between 12-59 months (OR 0.4, 95% CI 0.212-0.765, $P=0.005$). Indigenes of Akwa Ibom state were about 9 times more likely to practice enema compared to none indigenes of the state (OR 9.4, 95% CI 4.024-22.104, $p<0.001$) (tables 4 and 5).

Discussion

In this study, the prevalence of enema practice in children was high. Similar studies in South Africa reported even higher prevalence.^{7,9} In Benin, only 14% of the respondents mentioned recipes for rectal insertion concerning women's health or infant care, but in southern Ghana, enema use was mentioned in all interviews on women's health by people of different ethnic origin.¹⁸ Thus, the giving of enema to children is a common practice among African mothers, in contrast to the Indian mother who prefers the oral rather than the rectal route for purging her child.⁷

Mothers most often were the ones who administered the enema preparations to their children in this study. However, the enema was most often recommended to them by other members of the society. This underscores the significant influence other members of the community have on the decisions and actions of mothers. Hence, health education should not only target mothers but other members of the community who wield a significant influence on the actions of mothers. Enema was mostly administered in the mornings with an average of once every quarter of the year compared to higher frequencies of between 1 to 3 times daily in another study.⁷ The reasons, type, quantity, ingredient and frequency of administration of enema may vary from one mother to another and also with the same mother depending on the severity of the symptoms.⁷

Various substances were used for enema by mothers

in this study. Herbal enema was the commonest type of enema used by mothers, a finding that agrees with reports of a similar study.^{18,19} The top 2 commonly mentioned plants used in this study were *Talinum triangulare* (water leaf) and *vernonia amygdalina* (bitter leaf) which are commonly consumed vegetables in the study area. How safe these herbs are when taken rectally deserves further study. However, some herbal enema are known to be irritants causing abdominal pain, proctitis, colitis, low grade pelvic peritonitis with subsequent complications of stricture and abscess formation including liver damage.⁷ Luke warm water with soaps, lukewarm water with chloroxylenol (Dettol) and lukewarm water with salt used for enema in this study corroborates findings of a previous study in South Africa.⁷ Substances like alum, turpentine, potassium permanganette, soil and ash were used in other studies.^{7,18} Deaths is reportedly higher in children who received herbal enemas than those who had chemical enemas such as chloroxylenol (dettol), potassium permanganette, battery acid and vinegar.^{20,21} Health professionals in this setting need to be aware of these frequently used (herbal and synthetic) ingredients for enema to guide their history taking during clinical consultations and effective health education of mothers and other caregivers.⁹

Many illnesses and other conditions for which enemas were used by mothers were cited in this study. Worthy of mention is the use of enema for preparation of the body before the administration of antimalarials drugs to children to ensure the effectiveness of antimalarial. It is traditionally believed that taking oral medications on a 'dirty' stomach will reduce its absorption and efficacy hence the need for 'cleansing of the guts' before its administration. This may actually lead to a delay in the commencement of antimalarial. The result of taking enema on the effectiveness of antimalarials needs further research. However, the drug-herb interaction may actually nullify the treatment prescribed by physicians.⁷ Enema was also given as a treatment for fever and other illnesses in this study. Mothers in this study gave enema to enable a child pass stool freely (relief constipation) especially in newborns and to relief abdominal pains. It is important to reassure mothers about the normal pattern of stooling in the breastfed baby which varies considerably from once weekly to passing

stool after each feed.⁹ Mothers should also be taught that intestinal cramps occurring commonly in newborns are usually self-resolving and should be patiently educated on how to comfort their babies without giving enema.²² These will help reduce the unnecessary use of enema as a treatment of these conditions in the newborn. In South Africa, perceived constipation was the most commonly given reason for enema administration to about 46% of babies⁹ but it was unlikely that the majority of them were clinically constipated, especially as all of them were receiving some breast milk. The researchers thought that it was more likely that caregivers erroneously perceived that the babies were constipated if stools had not been passed for one or two days and thus gave enema to the babies. Even using enema to ensure that a child walks early as mentioned in this study as a reason for enema administration is corroborated by the South African study.⁷ Some mothers in this study gave enema to wash out meconium (black stools) stools in newborns. A similar study in South Africa reported that 53% of mothers gave their infants enemas more frequently than once weekly in their first 6 weeks of life to wash out meconium because they thought it to be harmful.^{9,18}

These enemas were administered using various devices. As in other studies^{7,18} the use of rubber bulb syringe with removable nozzle is the most common device for administration of enema in this study. These are squeezed to siphon the enema preparations and squeezed again to empty its contents into the rectum. The devices are sold in large quantities on open air markets and modern pharmacies in many African cities.¹⁸ Other devices used include flexible PVC ear syringe, cow's horn or a reed.^{7,18} These devices most often are not sterilized but rinsed in cold or warm water before and after use, and maybe used by more than one member of the family if there are many children to receive enema. This could facilitate transmission of HIV if there are blood stains on the device and other microbial infections such as bacterial, protozoal and worms.^{18,23}

This study reported significant associations between place of delivery of last child, point of immunization, age of the index child and ethnic group of the mother with the practice of enema. Mothers who had their last delivery in none health facilities were significantly more likely to give their

children enema than those delivered in health facilities. Repeated health education sessions against enema practice during antenatal clinic visits may account for this. In addition, admission of mothers and babies in health facilities before and after delivery under the supervision of health workers will prevent use of enema to treat meconium and abdominal colics in newborns. Mothers who had immunization services for their children in Primary Health centres were more likely to give their children enema than mothers whose immunization point was at the teaching hospital. The Primary health centre where the study was done provides immunization services to mothers many of who do not deliver in health facilities. Hence, such mothers may not benefit from health education and supervision of child care by health workers, factors that may reduce enema practice. Children twelve months and above were more likely to be given enema in this study than infants. These children have completed their scheduled immunization visits and the mothers may have less contact with health facilities for health education against this practice. Also, many of the reasons given by mothers for use of enemas in this study like fevers and malaria may be more prevalent in older children hence a higher rate of enema in this group. Moreover, indigenes of Akwa Ibom state were more likely to give their children enema compared to non-indigenes. The practice of giving enemas is variable among countries and within countries. Within countries that report the practice, there is a tendency for higher practice rates among indigenes compared to non-indigenes. This corroborates findings where enemas were more common in Ghana and Gabon compared to Benin.¹⁸ Hence, this practice may be rooted in the culture of some people than others. Independent predictors of enema practice after controlling for confounders were age of the index child and ethnic group of the mothers.

Conclusion

The practice of enema is common in the study area. Herbal enema was more commonly used than chemical enema. Mothers were the major administrators of enema with other members of the community recommending it to them. Dangers are associated with use of enema even in the clinical setting in the hands of skilled professionals and these risks can be life threatening in unskilled hands

in the communities. Health practitioners should be aware of these dangerous practices in the communities, seek for this history during clinical consultation and make concerted effort in educating mothers and other caregivers against this practice.

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