Gastro-enteritis in Paediatric practice

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Introduction

In most developing countries of the World "Diarrhoeal diseases" for children constitute one of the chief problems in paediatric practice. At present the situation of "Infantile gastroenteritis: is deplorable because of the following reasons:

a) Excessive incidence
b) Lack of resistance against the causative pathogens.
c) Greater liability of infants and younger children to develop water & electrolyte disturbances.
d) Widespread prevalence of malnutrition and under nutrition.
e) The high mortality and morbidity.

Factors responsible for the severity / rapidity of evolution of clinical features in gastroenteritis & dehydration are as follows:

1. The greater body content of water in infants.
2. The larger turnover of water in infants as compared to the adult (the latter's intake and output of water is a seventh of his extra cellular fluid where as the former's fluid balance equals half his extra cellular fluids. It is therefore obvious that continued loss of water cause circulatory failure.
3. The loss of water (insensible loss) is also greater since their surface area is about twice or thrice than that of the adults.
4. Greater metabolic requirements call for more water for elimination.
5. The immaturity of the infants' kidney (can not excrete solutes readily) & their poor concentrating capacity are additional factors in aggravating dehydration. There is also inability to excrete urea and lactate.
6. Infants can't quench their thirst by taking water themselves and in many of our patients no water is offered to them by parents. The reasons for not offering water are:
    a) That the children refuse to take plain water.
    b) In some children incessant vomiting precludes fluid intake.
    c) According to some mothers water intake itself aggravates the condition. Study says the incidence of gastroenteritis is much higher in bottle fed babies than breast fed babies with the exception of epidemic diarrhoea of the newborn. The reasons of the increased incidence are:
        - The contamination of foods rendering milk bacteriologically unsafe.
        - Differences in composition between breast milk and artificial foods.
        - Differences in the bacterial flora of the intestine & acidity of the stools in the breast fed babies as against the alkalinity of stools in bottle fed babies etc.

Etiology the behind this gastroenteritis is most often due to bowel infection by various pathogens (Shigella, Salmonella, some strains of E. coli, etc.). Diarrhoeas may result from dietetic causes, namely overfeeding, indigestible articles of food or badly balanced diet with too

much sugar, salt, fat or fruit juices. Rarely infection elsewhere in the body other than the bowel can give rise to diarrhoea as for example, upper respiratory infection, otitis media, etc.

Following biochemic & physiologic alterations are occurring in gastroenteritis in children. These changes are chiefly due to the loss of water and electrolytes from the body. Water is lost in enormous amount in frequent liquid stools and diarrhoea caused by hyper peristalsis. Along with the electrolytes, especially Na+, K+ & bicarbonates (HCO_3) are also lost. When condition is accompanied by copious vomiting there is further loss of fluid through the skin and lings (aggravated by fever, high environmental temperature, hyperpnoea of acidosis) also add to the fluid deficit.

The infant is unable to replace the losses because unlike the adults (a) he can't reach water, (b) anorexia as well as vomiting when present may also prevent effective oral entry of fluid, (c) assimilatory mechanism of the intestine is impaired in diarrhoea producing the normal absorption of nutrients.

These events tested to produce firstly dehydration or reduction in fluid volume of the body. The blood plasma is the first to feel the fluid loss, but this is promptly replaced by the interstitial fluids. If the process is rapid and continued, the compensatory mechanism fails, there is marked reduction of interstitial fluid volume followed by concentration of plasma volume, the blood pressure falls leading to peripheral stasis, cellular anoxia with accumulation of products of incomplete carbohydrate metabolism, and finally shock may supervene.

Literature review:

The etiology of diarrhoea may be summarized as follows:

Infections: (Enteral)

1. Bacterial – E.coli, paracolon group, salmonella, shigella, staphylococcal.
2. Viral – rotavirus, adenovirus, arbovirus, Norwalk agents.
3. Protozoal – E.histolytica, giardiasis.
4. Fungal

Infections: (Parenteral)

1. Upper respiratory tract infection
2. Upper urinary tract infection
3. Any other.

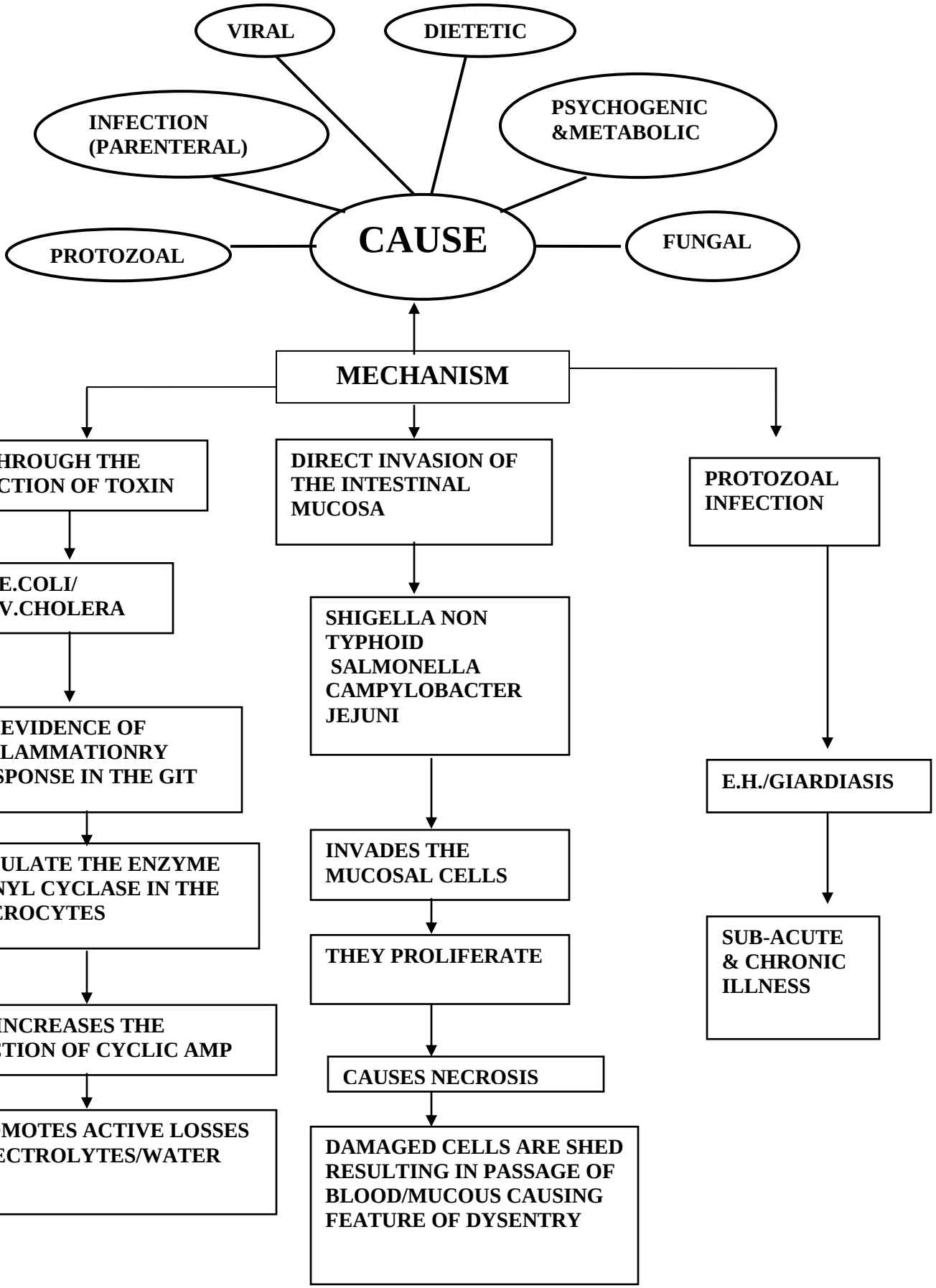
Dietetic:

1. Under feeding
2. Over feeding (Excess of fat and carbohydrate)
3. Food allergy
4. Intolerance
5. Food poisoning

Others:

1. Psychogenic
2. Metabolic disorders like hyperthyroidism

Aetiopathology of Diarrhoea



Physiologic disturbances in the body from diarrhoea in children

Approximately 60% of child's body weight is water which is present in extra cellular fluids (E.C.F.) & intra cellular fluids (I.C.F.). E.C.F. includes blood interstitial fluid and secretions. Kidneys regulate the electrolyte contents of extra cellular compartment by:

- Filtering
- Concentrating
- Diluting
- Reabsorbing fluid and metabolites from circulation

Functional ability of kidney of young children is not fully developed. Large amount of water and water soluble nutritive substances such as electrolytes, metabolites, vitamins are lost from the body during diarrhoeal episodes that is from extra cellular compartments. In normal condition sodium concentration in plasma or extra cellular compartment is 140 mEq / L. sodium loss occurs in diarrhoea resulting into (hyponateraemia) relative decline of serum sodium, is major osmotic determinant of the E.C.F. Therefore the osmolarity of E.C.F. fall causing movement of water from extra cellular compartment to intra cellular compartment. As a result skin tugor or elasticity is lost and appears to be wrinkled like that of an old man.

As extra cellular compartment is depicted, the blood volume is reduced. This results in weak thready pulse, fall of blood pressure, extremities appear cold.

Because of low hydrostatic pressure in the renal calculi the filtration of urine is reduced and metabolites cannot be excreted properly due to poorly functioning kidney. In severe case there may be renal failure.

Diarrhoeal stool contain large amount of potassium so serum K+ level falls, so children exhibit abdominal distension. E.C.G. will show ST depression and flat T wave.

Intestinal secretions are alkaline and considerable bicarbonate is lost in diarrhoeic stool, so there may be acidemia. Patient is asymptomatic till the base excess falls to 12 mmol / L. below this level there will be deep and rapid breathing (Kussumal breathing).

In early and mild cases of diarrhoea the child may:

- Thirsty
- Slightly irritable

As the diarrhoea continues child becomes

- More irritable
- Develops pinches look
- If open fontanele, it looks sunken

Clinical approach to diagnosis:

In rotavirus diarrhoea:

- Vomiting is early feature
- Mild to moderate fever

Norwalk virus:

- Occurs to pre-school children

E.coli / V. cholerae:

- Stool are large and water
- Fecal mater appears curdy.
- Vomiting is common

Shigella:

- Dysentery – stool with mucus & blood
- Abdominal cramps and tenesmus
- Fever

Salmonella / Campylobacter / Shigella / E.coli. (Invasive type)

- Small amount of blood

Staphylococci / Candida albicans / Clostridium:

- Severe cases of diarrhoea in very sick infants who had received prolonged treatment / with broad spectrum antibiotics.

<u>Clinical features of dehydration:-</u>

Mild:	Irritable, thirsty
Moderate:	Irritable weak pulse
	Some reduction in urine volume, Fontanele depressed.
	Eye balls sunken facies dry and pinched buccal mucosa dry.
	Lips dry loss of skin turgor (except in the hypernatremic variety)
	Thirsty.
Severe:	Moribund, apathetic
	Peripheral circulatory failure (Cold extremities, warm body, excessive blanching, Weak pulse)
	Marked reduction of urine volume
	Fontanele markedly depressed.
	Facies markedly dry and pinched.
	Buccal mucosa dry.
	Tears absent.
	Lips parched.
	Loss of skin turgor (Except in hypernatremia in which it may not be prominent)
	Breathing is fast.
	Refuses drinks.

Principle therapy of dehydration:-

1) **<u>Severe cases:</u>**
   The status of dehydration should be determined quickly and emergency treatment instituted if necessary.
2) **Mild to moderate cases:**
   i) Fluid , electrolyte and acid-base homoeostasis should be preserved & maintained.

ii) Nutritional status of patient should be restored as early as possible. Breast feeding should be continued. Refeeding should be started early & extra food supplements should be given during convalescence.

iii) There is no scientific basis for the use of anti-motility drugs or binding agents.

iv) Associated features such as persistent vomiting abdominal distension and convulsion should be managed appropriately.

3. Fluid management:-

The key to effective fluid management in childhood diarrhoea is early replacement of fluid losses, starting with first sign of liquid stool. Plenty of home available fluid should be given to the patient early in the illness to prevent dehydration. As long as the renal function is maintained, profound electrolyte and pH disturbances do not occur.

I) Initial management with any fluid available at home (Plan A of W.H.O). In children with no or minimal dehydration of the mother should be advised to offer fluids that are easily available at home in as much quantity as the child can take orally without vomiting. Thus coconut water, butter, milk, rice kanji, lemon, sugar beverage (Nimbu pani sherbet), weak tea etc, may be given ad lib either with a teaspoon or in small sips from a tumbler. In mild cases, diarrhoea 7 vomiting are generally controlled within a short period and dehydration does not develop. Mother should be told to seek medical advice if the condition does not improve or if the child becomes dehydrated. Mother should be advised to watch for symptoms and signs of dehydration, which should be explained to her. If the condition worsens, the mother should give home made ORS solution before she gets medical attention.

II) Oral rehydration therapy (ORT) with home made solution: A fairly satisfactory solution for oral rehydration can be prepared at home by mixing 6-8 level teaspoonful of cane sugar (40 gms of cane sugar), on level of common (Five gms of NaCl) with or without a lemon squeezed in 1 lit of potable water. Since 2 gm of sugar releases 1 gm of glucose, 40 gm of sucrose is used. Alternatively a pinch of table salt and two teaspoon of cane sugar are mixed with a glass of water.

Some health workers successfully, substituted 20gm of glucose or 40 gm of cane sugar by 50 gm of puffed rice powder in the home made ORS and got equally satisfactory results. It may be possible to replace part of puffed rice powder with the cereals or cooked legumes, such as rice and dal gruel or khichri in areas where it is culturally preferred mode of diarrhoea management. It takes about 5-7 mins of boiling water to prepare this. The preparation must be allowed to cool properly before administration.

III) Treatment of moderate dehydration with oral rehydration salts (ORS) solution. Plan B of W.H.O recommended schedule:-

If the diarrhoea is prolonged and moderate dehydration becomes evident, it is desirable to rehydrate the child orally by administering a solution of with composition approved by World Health organization(Glucose 20g, sodium chloride 3.5g, trisodum citrate 2.9 g or Sodium bicarbonate 2.5 g and Potassium chloride 1.5g dissolved in 1 lit of safe drinking water) The solution provides 90 mEq/L of Na+, 80 mEq/L or Cl and 30 meq/L of HCo_3 or citrate. It is

administered in small sips or with a tea spoon every one or two mins to prevent vomiting or rapid passage of stools due to hyperactive gastro colic or rapid passage of stools due to hyperactive gastro colic reflex. It should be given freely till the dehydration is corrected. It the child is vomiting , ORS should be withheld for 10 mins and then restarted.(If the vomiting is persistent, intravenous rehydration is necessary). Broadly speaking a 1 yr old infant needs about 600ml or ORS in 4-6 hours and another 600 ml in the next 12 hours may be prepared at a time to avoid extraneous contamination of ORS during storage. Rice base ORS is known to reduce the stool weight and frequency earlier than glucose based ORS.

IV) Emergency treatment for severe dehydration:

Severe dehydration is major paediatric emergency, which may end fatally if not managed early & adequately. A severe dehydrated patient appears drowsy, in apathetic and become moribund. As he/ she goes into peripheral circulatory failure, extremities appear cold, though the body may be warm. The skin blanches for more than a few seconds. Pulse is weak & fast. The quantity of urine passed is reduced or the child does not urinate for more than 6 hours. Besides these, other clinical features more characteristic of moderate dehydration are also present. These include depressed anterior fontanele (if open), sunken eyeballs , dry oral mucosa and poor skin turgor. They are lethargic and irritable. In children with nutritional wasting of the subcutaneous tissue, the skin elasticity is impaired even when there is no dehydration, Therefore, in malnourished children, associated dehydration should be diagnosed if the little finger of the examiner, passed over the inner side of the cheek, feels dry. Dehydrated child does not have tears on crying.

Less than 1 percent of all cases of diarrhoea in the community develops severe dehydration and circulatory or renal insufficiency and need emergency treatment of rehydration to save their life or prevent irreversible physiologic damage. Therefore, it is not necessary to give intravenous fluids in any but the most severe case of diarrhoea. Besides being expensive and time consuming, intravenous medication may be potentially hazardous because of the risk of over hydration and possibility of introducing infection in the veins causing thrombophlebitis or septicemia.

If a child develops severe dehydration and/or has persistent vomiting with or without marked upper abdominal distension, it is prudent to start an intravenous drip of Ringer's lactate solution, give at a rate of 30 ml/kg of body weight in the first hours. The rate of drip is slowed to 20ml/kg/hr in the next 2 hours. If the child does not pass urine within 3 hours of starting intravenous infusion, acute renal failure should be suspected. It is important to check all signs to be sure that the child is fully hydrated before labeling it as acute renal failure. In case of acute renal failure, it is not desirable to further push fluids and specialist's help should be sought for the management of renal failure. A child who starts passing urine in 2 hours should receive 40 ml/kg of Ringer's lactate solution intravenous in the next 2 hours as well. Concurrently, oral rehydration therapy should be started as described above. The patient is kept under

surveillance and as his condition is improves and he starts taking ORS, the intravenous medication can be discontinued. It should be possible to remove the I.V line in almost all cases within four or five hours as rehydration will be suffice for replacing continued losses and maintenance requirement of fluids.

Prevention of diarrhoea and malnutrition:

Prevention of diarrhoea and its nutritional consequences should receive major emphasis in health education. Since breast milk offers distinct advantages and protection from diarrhoeal illness, its continuation should be vigorously encouraged and its importance in promoting growth & development of infant should be stressed. Exclusive breast feeding may not be adequate to sustain growth beyond the first 5-6 months of life. Therefore supplementary feeding with energy-rich food mixtures containing adequate amounts of nutrients should be introduced by 4-5 months of age without stopping breast feeding. Complementary foods should be protected from contamination during preparation, storage or at the time of administration.

Mothers should be properly guided to avoid this risk by concrete recommendations such as the use of clean containers, avoiding exposure of food to dust, flies or cockroaches. Hands should be washed and dries with paper tower or clean towel and not by repeatedly used towels before administration of food to the bay. Water given to the child or used for preparing feeds should be clean, potable preferably boiled. Vegetables and fruits should be washed and peeled before these are fed to the child. Improvement of environmental sanitation, good water supply, adequate sewage disposal system and protection of food from exposure to bacterial contamination are effective long term strategies for control of all infectious illness including diarrhoea. These for control of all infectious illness including diarrhoea. The measures should be sustained to achieve the desired goals.

CHRONIC OR PERSISTENT DIARRHOEA:

About 5 percent of diarrhoea cases in the community become chronic and last more than two weeks. Diarrhoea means change in frequency of bowel movement or consistency of stools. Acute diarrhoea may become chronic because of

a) Persistent colonization of upper small intestine by microbes.
b) Dietary allergies
c) Carbohydrate intolerance because of damage to the brush border of intestinal mucosa, resulting low levels of disaccharides.
d) Infants and children with decreased host immunity such as after an attack of measles, or delayed repair of intestinal damage because of associated protein-energy malnutrition are more prone to protracted diarrhoea.
e) Younger infants who are weaned very early develop intolerance to food proteins such as cow's milk or even soya milk.
f) Poor personal hygiene and environmental contamination may lead to recurrent intestinal infections before the infant recovers from previous episode.
g) Protozoal infections with Giardia lambila or Entamoeba histolytic and inadequate treatment of cute diarrhoea is another important cause, classification of causes of chronic diarrhoea is given below.

Causes of chronic diarrhoea and malabsorption

1) Chronic or relapsing infection of gastrointestinal tract: Persistent colonization of the upper small intestine with microbes; infestation with Entamoeba histolytica and Giardia lambilia.
2) Inflammatory bowel disease: Non specific ulcerative colitis, Crohn's disease, collagenous colitis and lymphocytic colitis.
3) Malabsorption of carbohydrates: Deficiency of disaccharides, inborn or secondary to protein-calorie malnutrition, viral and bacterial enteritis. Excessive use of poorly absorbed carbohydrates such as wheat starch and fiber.
4) Some children may have a transient mild disaccharide malabsorption in the post diarrhoea period as evidenced by low pH of stools(Less than 5.5, on two occasions) and presence of ½ percent of more of reducing substance in the stools. This is necessitate with drawl of milk. Most patients can tolerate half to two third diluted milk in such post-diarrhoeal, transient disaccharide malabsorption, which generally lasts 3-14 days.
5) Medications & food activities: Use of antibiotics, sweetening agents such as sorbitol, fructose and magnesium containing antacids.
6) Cow's milk allergy.
7) Deficiency of pancreatic enzymes. Cystic fibrosis.
8) Deficiency of bile salt, intestinal stasis, ileitis or resection of ileum, liver disease, bile duct atresia.
9) Immune deficiency disorder especially IgA deficiency syndromes, opsonin deficiency.
10) Defects of monosaccharide transport.
11) Defects of formation and transport of chylomicrons. Abetalipoproteinemia. Exudative enteropathy with intestinal lymphangiactasia and lymphoma.
12) Idiopathic or functional diarrhoea. Irritable colon.

Approach to diagnosis:-

Determine if the child having diarrhoea with significant increase in stool weight. Increased frequency with very small evacuation needs only reassurance and use of prokinetic agents like cisapride. If the diarrhoea is confirmed, organic cause is suggested by the following features: Diarrhoea is of relative short duration say less than 3 months; continual rather than intermittent; of sudden onset; associate with significant weight loss; high erythrocyte sedimentation rate and low haemoglobin level. Keep the child non lactose free diet for few days to exclude the post infection temporary lactose intolerance.

Some diagnostic tips:-

Amoebic diarrhoea may be watery or bloody. Stools must be collected in dry container since water or urine mixed with stools may hamper with identification of amoeba.

Crohn's disease is difficult to diagnose radiological. Small bowel barium studies do not exclude the disease. Enterolysis is done by nasoduodenal intubations and administration of

barium, cellulose and air under fluoroscopic control to get the most optimal dilation and of air contrast medium.

Steatorrhea is diagnosed by history of weight loss, greasy, bulky sticky stools which are difficult to flush and very foul odour. Stools should collect for 72 hours for fat estimation. Normally 9 percent of ingested fat is absorbed. Excretion of more than 2gm fat indicates steatorrhoea. Sudan III staining of stools pick up excretion of more than 10 gm of fat per day.

Carbohydrate malabsorption diarrhoea is intermittent and is usually associated with bloating, flatus and crampy abdominal pain.

In secretory diarrhoea, loose stools persist or are partially controlled after two day's fasting. In these electrolytes accounts for most of the stool osmolality. Fecal/serum osmotic gap is less than 50 mOsmol.

Investigations:

Stage one:-

Stools should be examined for ova, cyst & pus cells, pH of stools, stool weight and fecal fat in 72 hours specimen. Blood investigations include total and differential leucocytes, hemoglobin, serum albumin and potassium for hypokalemia. Plain X-ray abdomen, barium studies of gastrointestinal tract and the endoscopy evaluation of sigmoid are the other first stage of investigations.

Stage two:-

Enzyme linked immunosorbent assay for giardia antigen. Radiological studies such as enterocolitis and CT scan of abdomen. Endoscopy and biopsy of right side of colon to rule out amoebiasis and Crohn's disease. Breath hydrogen analysis and tests fro bile acids.

HOMOEOPATHIC MATERIA MEDICA:-

INDIAN DRUGS IN DYSENTERY

1) AEGLE MAR/ AEGLE FOLIA

- Anorexia
- Associated with abdominal colic
- Associated with indigestion
- Indicated for amoebic/bacillary dysentery
- Flatulency < afternoon

2) CYNODON DAC

- Stool with mucus & tenesmus
- Indigestion
- Rumbling / gurgling in abdomen
- Indicated in EH/ Giardiasis.

3) TERMINALIA CHEBULA

- Passes little stool with intense desire.
- Associated with sweating
- Anorexia

4) HOLARRHNEA ANTIDSENTRICA:-

- Indicated in acute & chronic cases.
- Associated with weakness
- Associated with emaciation
- Colic pain in the umbilical region
- Anorexia

5) FICUS RELIGIOSA

- Dysentery with more blood
- Vomiting of bright red blood
- Great repugnance of all food.
- Profuse salivation with white tongue.

6) CEPHALANDRA INDICA:

- Greenish stool
- Greenish stool mixed with blood.
- Pain before /during stool
- Anorexia
- Flatulency
- Dryness of mouth with thirst for large quantities of H_2O.

7) ACHYRANTHES ASPERA

- Loose stool , yellowish colour.
- Pain in stomach
- Stool with mucous
- Nausea/vomiting
- Excessive thirst.

8) ATISTA RADIX

- Amoebic/ bacillary dysentery
- Dysentery in autumn.
- Bleeding is the hall mark of remedy.
- Intense pain in umbilical region.

BOWEL NOSODES

1) MORGAN P:

- Child suffers from sinking feeling in the abdomen
- Vomiting > all complaints
- Bitter taste in morning.
- Desire- fat/sweet/ egg/ butter
- Anorexia in morning
- Irritable
- Tense
- Avoid company

2) DYSENTERY-CO

- Constipation & diarrhoea alternate
- Acrid/ burning in nature
- Stool forcibly expelled < 3-6 am.
- Sleepless
- Chilly patient.
- Desire- Sweet, salt/ milk.

3) GARTNER

- Vomiting < after sweet
- Headache with vomiting, after artificial food.
- Thread worm infestation
- Intolerance to fat.
- Aversion to bread/ butter.
- Desire sweet/egg.
- Salivation
- Nervous(Alone/noise)

4) MORGAN-G

- Indigestion
- Distended abdomen
- Sour taste in mouth
- Aversion to fat/egg
- Desire sweet/salt
- Claustrophobia
- Weeping
- Restlessness

AIM & OBJECTIVES:-

Hence understanding the magnitude of problems a retrospective study was undertaken from the available records of the /O.P.D.I.P.D of Dr. A.C. Homoeopathic medical college & Hospital from July 1988 to 1989 and of authors clinic from 1979 to 1988 with the following objectives:

a) To ascertain the incidence of disease among the children & infants.
b) To study the frequency of diseases in various seasons.
c) To find out the magnitude of disease among infants & children.
d) To ascertain the effects of homoeopathic drugs in such cases.
e) To determine the effect of homoeopathic drugs with oral rehydration in such cases.

METHODOLOGY

1) The medicines are prescribed on the basis of totality of symptoms.
2) Diagnostic features are as follows:

a) Mild cases:-

i) Loose offensive stools (5-6 times in a day) which may be greenish in colour or may contain milk curds or a good deal of mucus.

ii) No constitutional symptoms.

b) Moderate:-

i) Loose acidic stools(several times in a day)

ii) Vomiting

Constitutional symptoms like-

1. Anorexia
2. Fever
3. Weight loss not more than 5 %
4. Signs of dehydration

c) Severe:-

i) Loose watery, colorless and frequent tool.(15-20 motions in a day to the passage of small stools every few minutes).

ii) Vomiting is marked and troublesome preventing oral rehydration.

iii) Constitutional symptoms like-

- Child looks acutely ill, the face drawn nd the skin is dry.
- Irritable, restless first, then lethargic.
- Weight loss may exceed 10%
- Signs of dehydration
- Intense thirst.

For collection of the responses, obtained by drugs following parameters were fixed up.

Positive response- Cure- Disappearance of all symptoms during treatment.

Negative response- Not cured- There is no improvement at all or improvement of few symptoms or no improvement to few symptoms during treatment.

Dropped out- Did not stick to for treatment for sufficient time.

Following age groups were made for study.

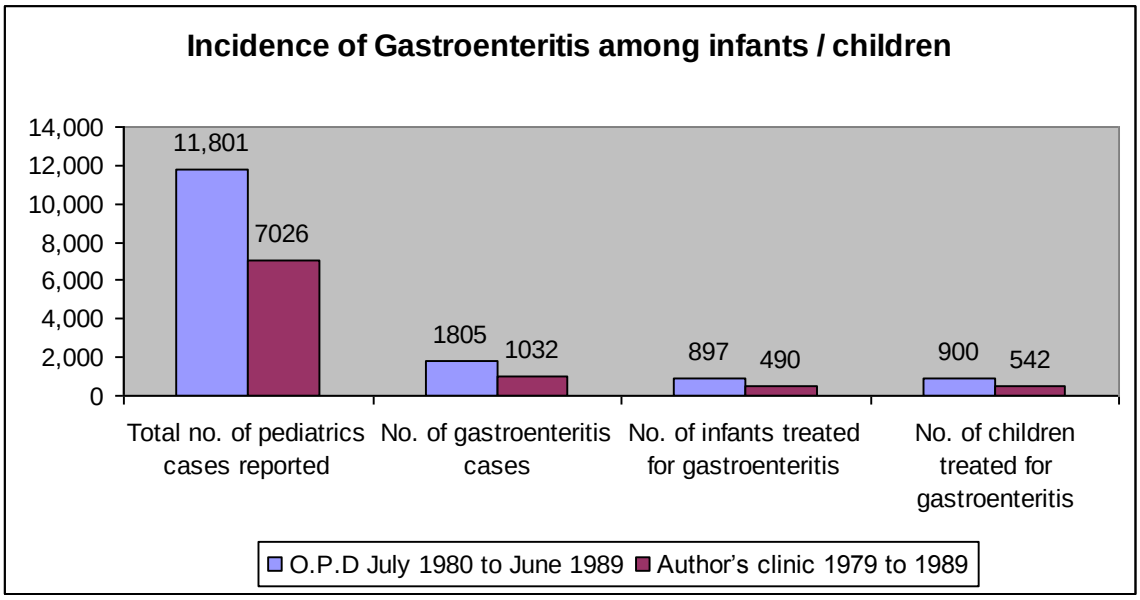
Infants- 1 month to 1 year

Children- 1 year to 12 years.

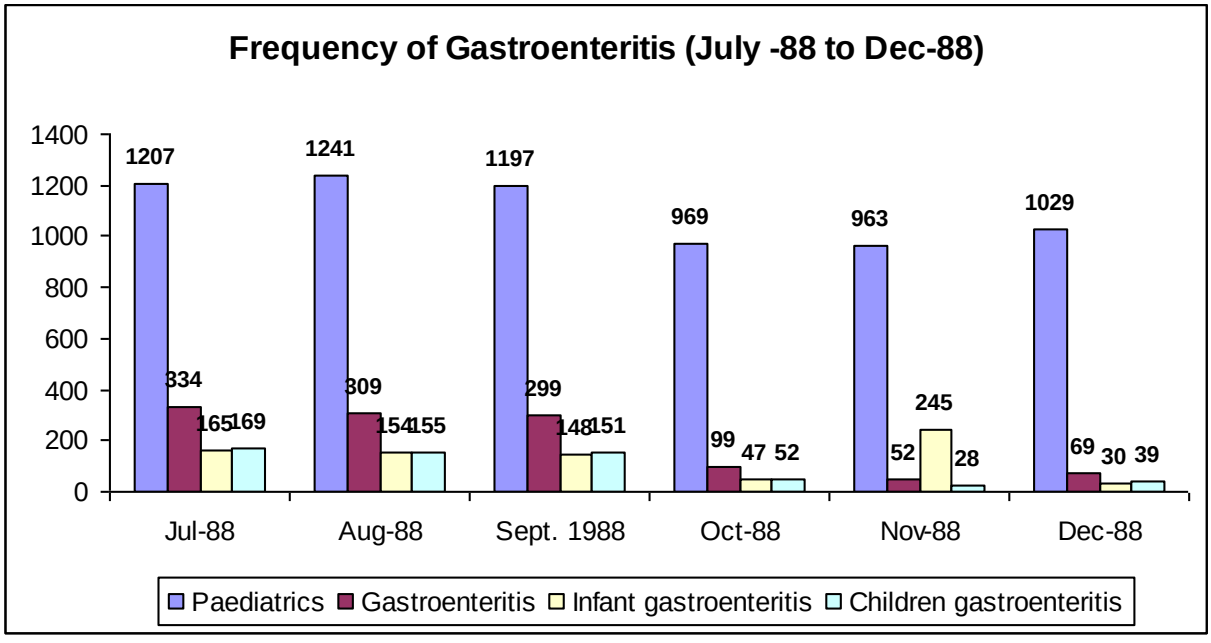
Results are obtained in tabular form.

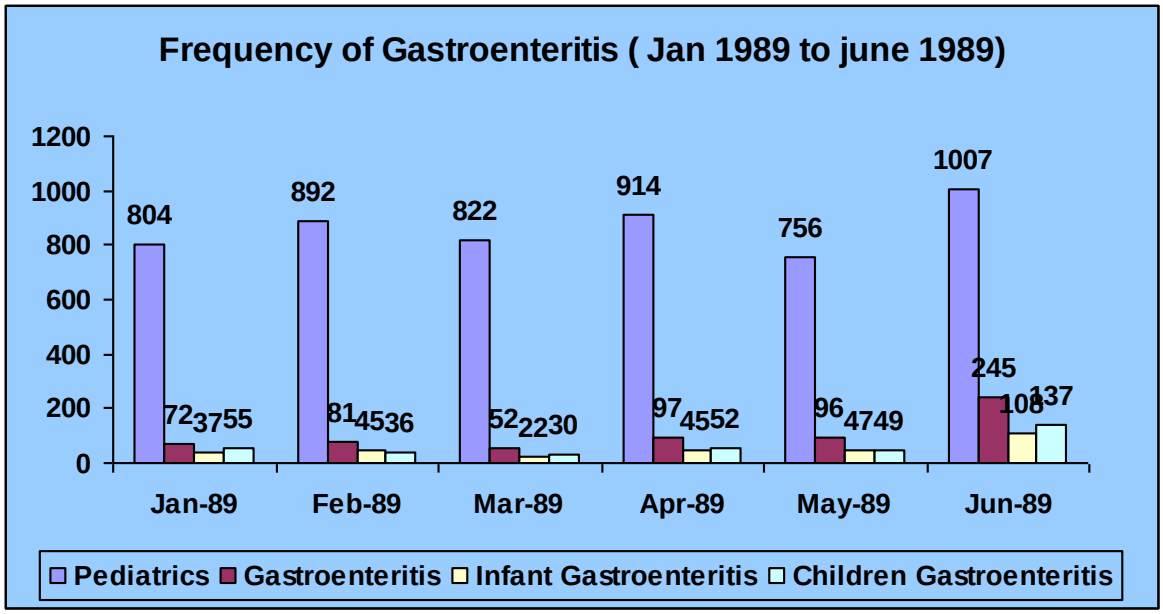
INCIDENCE OF GASTROENTERITIS AMONG INFANTS / CHILDREN

Place	Total no. of pediatrics cases reported	No. of gastroenteritis cases	No. of infants treated for gastroenteritis	No. of children treated for gastroenteritis
O.P.D July 1980 to June 1989	11,801	1805 (15.3%)	897 (7.1%)	900 (8.2%)
Author's clinic 1979 to 1989	7026	1032 (14.7%)	490 (6.9%)	542 (7.0%)

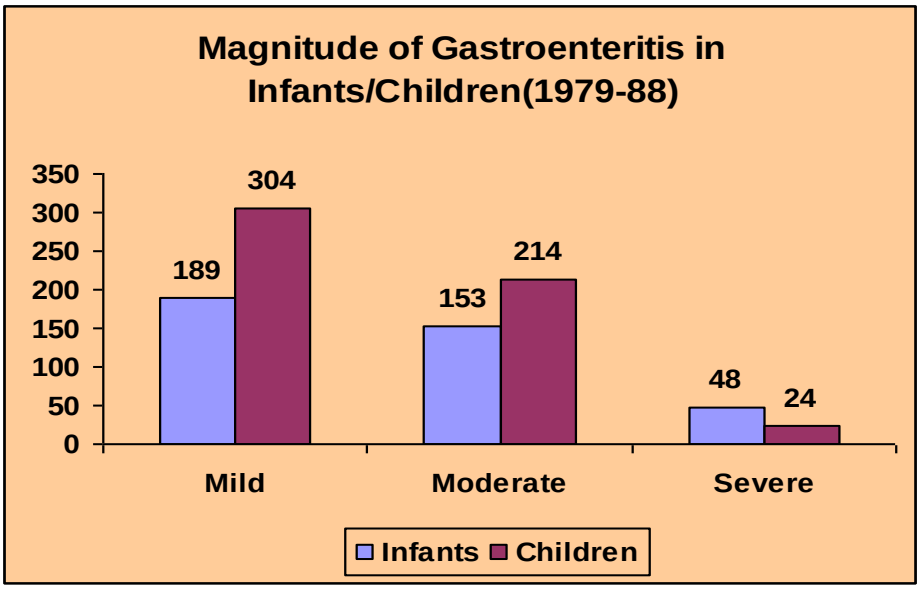


FREQUENCY OF GASTROENTERITIS(MONTH WISE) (O.P.D DR. ABHIN CHANDRA HOMOEOPATHIC MEDICAL COLLEGE AND HOSPITAL				
Month	Total no. of cases reported	Total no. of gastroenteritis cases	Total no. of infants treated for gastroenteritis	Total no. of children treated for gastroenteritis
July 1988	1207	334	165	169
August 1988	1241	309	154	155
Sept. 1988	1197	299	148	151
October 1988	969	99	47	52
November 1988	963	52	245	28
December 1988	1029	69	30	39
January 1989	804	72	37	55
February 1989	892	81	45	36
March 1989	822	52	22	30
April 1989	914	97	45	52
May 1989	756	96	47	49
June 1989	1007	245	108	137



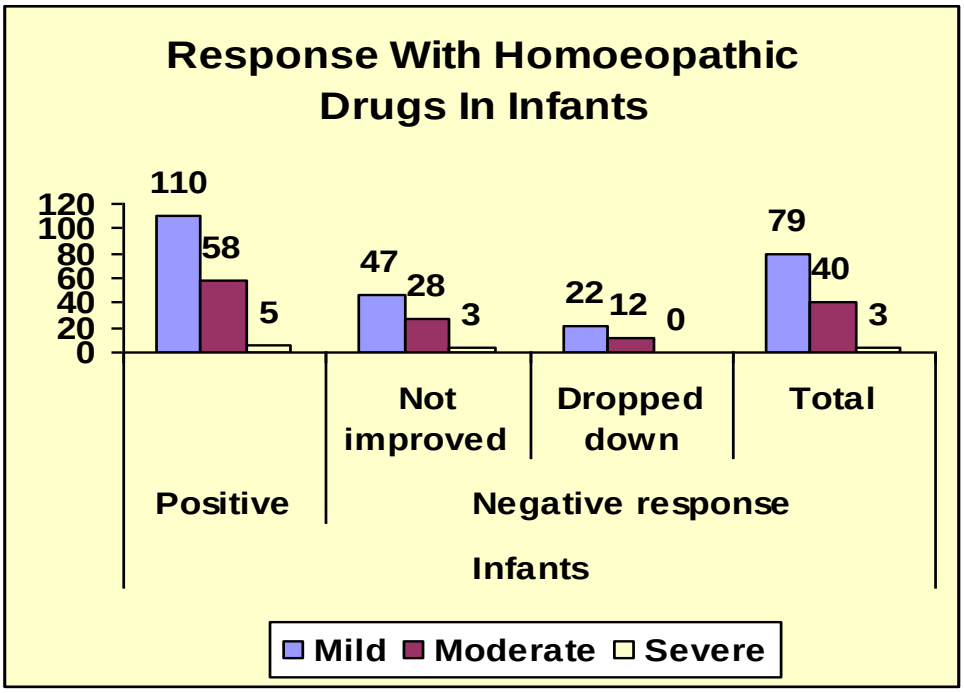


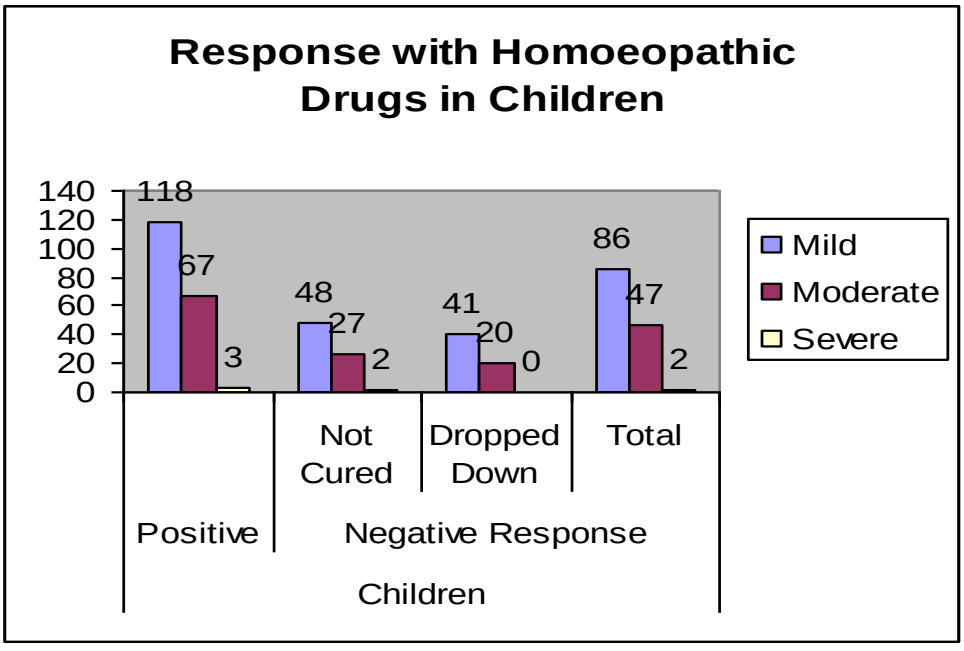
MAGNITUDE OF GASTROENTERITIS IN INFANTS/CHILDREN (Author's clinic record 1979-88)				
Magnitude	**INFANTS**		**CHILDREN**	
	NUMBER	**PERCENTAGE**	**NUMBER**	**PERCENTAGE**
Mild	189	59%	304	56.2%
Moderate	153	31.2%	214	39.4%
Severe	48	9.8%	24	4.4%
Total	490	100%	542	100%



RESPONSE WITH HOMOEOPATHIC DRUGS

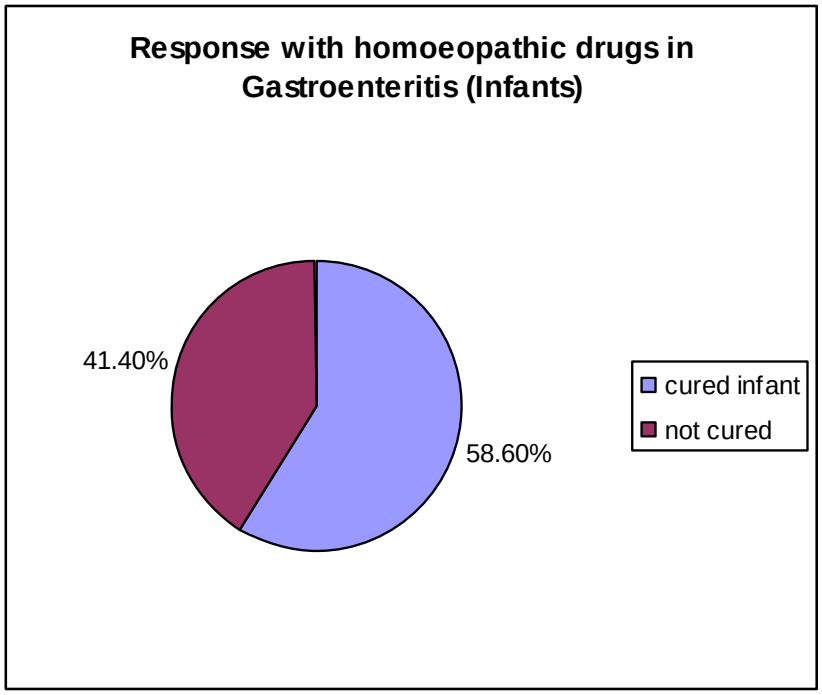
Magnitude	Infants				Children			
	Positive Response Cured	Negative response			Positive Response Cured	Negative Response		
		Not improved	Dropped down	Total		Not Cured	Dropped Down	Total
Mild	110	47	22	79	118	48	41	86
Moderate	58	28	12	40	67	27	20	47
Severe	5	3	0	3	3	2	0	2
Total	173			135	88			135

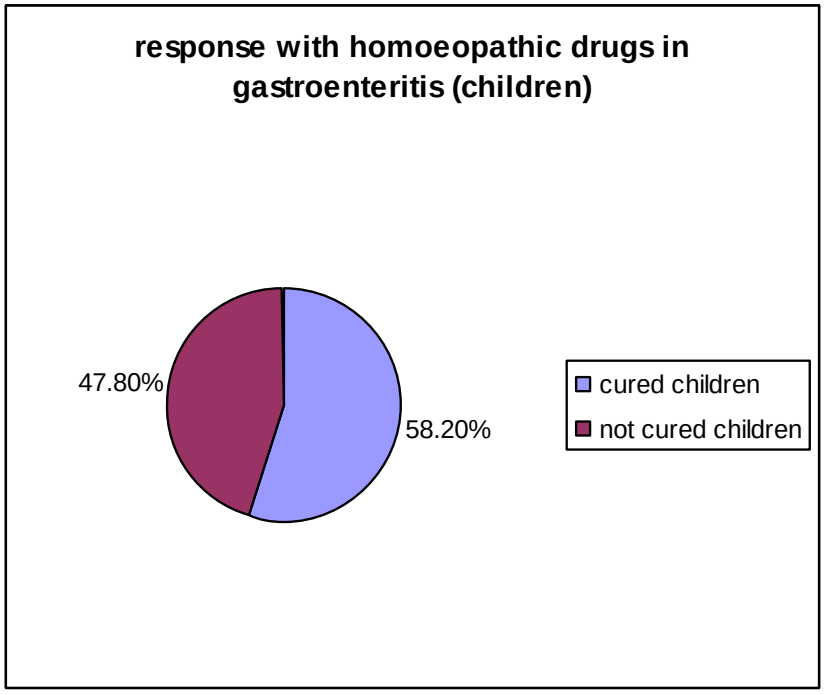




Infants –
Cured – 58.6 %
Not cured – 41.4 %

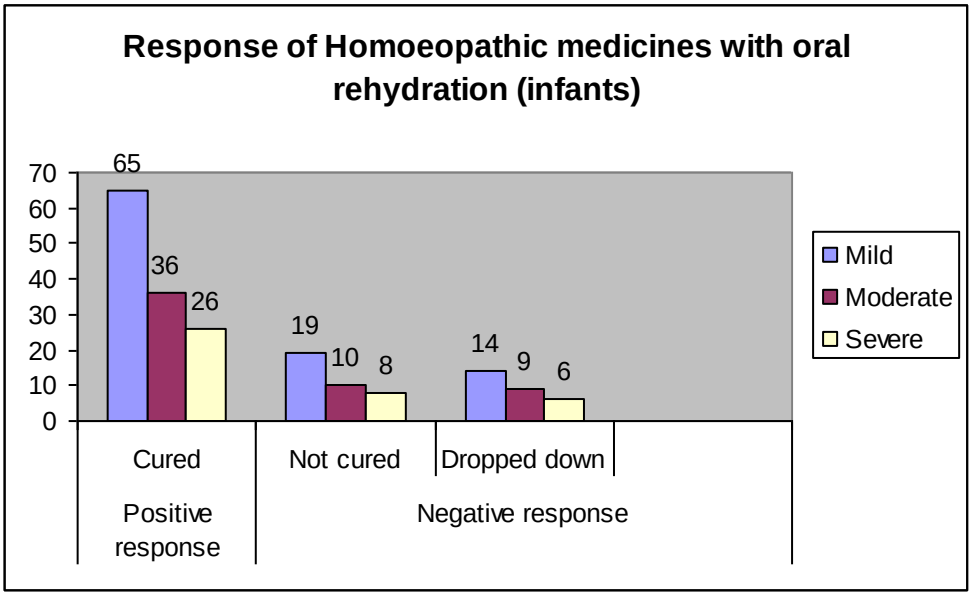
Children -
Cured – 58.2 %
Not cured – 47.8 %

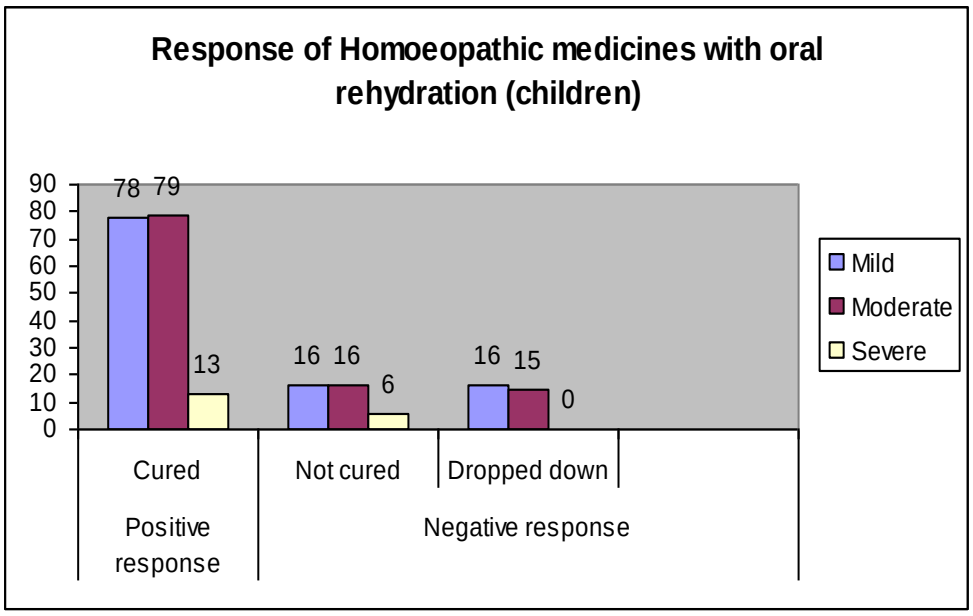




Response of homoeopathic drugs with oral rehydration

Magnitude	Infant				Children			
	Positive response	Negative response			Positive response	Negative response		
	Cured	Not cured	Dropped down	Total	Cured	Not cured	Dropped down	Total
Mild	65	19	14	33	78	16	16	32
Moderate	36	10	9	19	79	16	15	31
Severe	26	8	6	14	13	6	0	6

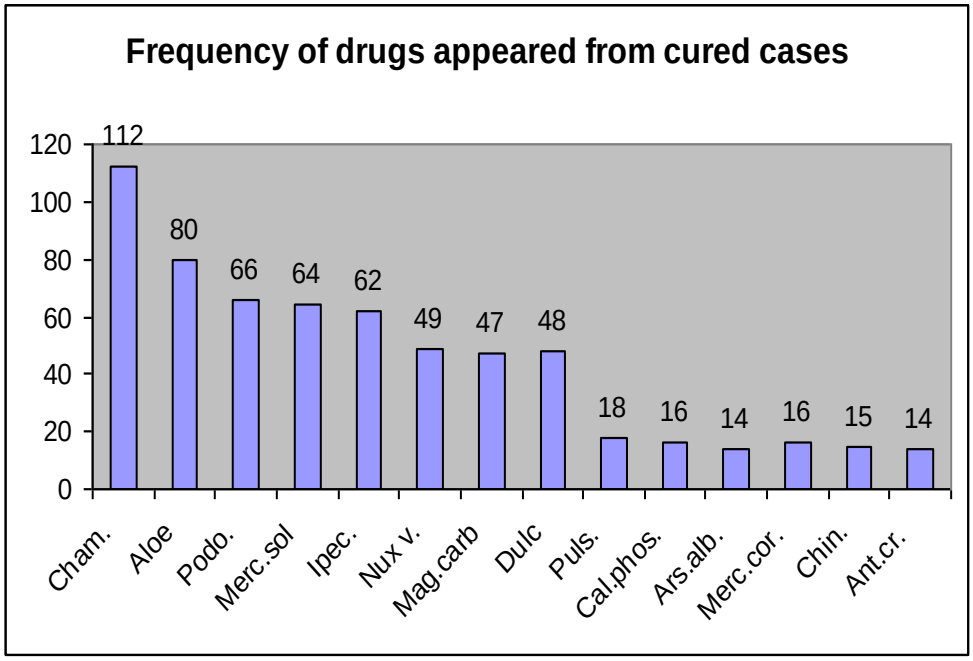




Frequency of Drugs Appeared from cured cases

Cham.	Aloe	Podo.	Merc.sol	Ipec.	Nux v.	Mag. carb	Dulc
112	80	66	64	62	49	47	48

Puls.	Cal.phos.	Ars.alb.	Merc.cor.	Chin.	Ant.cr.
18	16	14	16	15	14



RESULT ANALYSIS:

1. Study from incidence table indicates the occurrence of this disease among infants and children is 15%. Again it reveals the incidence of this illness among infants as 7%.
   The high percentage of occurrence of this sickness among infants is perhaps due to immature immunological response they exihibit.
2. Higher frequency of gastroenteritis has been observed from june to September; perhaps this is due to “Flies” which act as vectors, are plentiful in these days after a light rain. Again it may be due to the free growth of the saprophytic organism in contaminated food during these days. Above state may be superadded to the dehydration due to summer.
3. From magnitude study it is observed that severity is more among infants than older children.

Factors responsible for above have already been delineated in the introduction chapter of this paper against the factors responsible for the severity/rapidity of the evolution of clinical featutres in gastroenteritis.

4. Cure rate has been ascertained to be 50% but the cure rate for this gastroenteritis in infants/children has been fostered to 67% by homoeopathic drugs along with oral rehydration.
5. Most frequently occuring drugs are
    a) Chamomilla 112
    b) Aloes soc 80
    c) Podophyllum 66
    d) Merc.sol 64
    e) Ipecac 62 & etc.

Hence pilot project may be undertaken for prophylaxis against-gastroenteritis in children before the commencement of a peak season (i.e. from June to September) with above category of drugs to ascertain its validity in practice/ or by selection of "genus epidemicus", of that area basing on the previous episodes under project study.

CONCLUSION

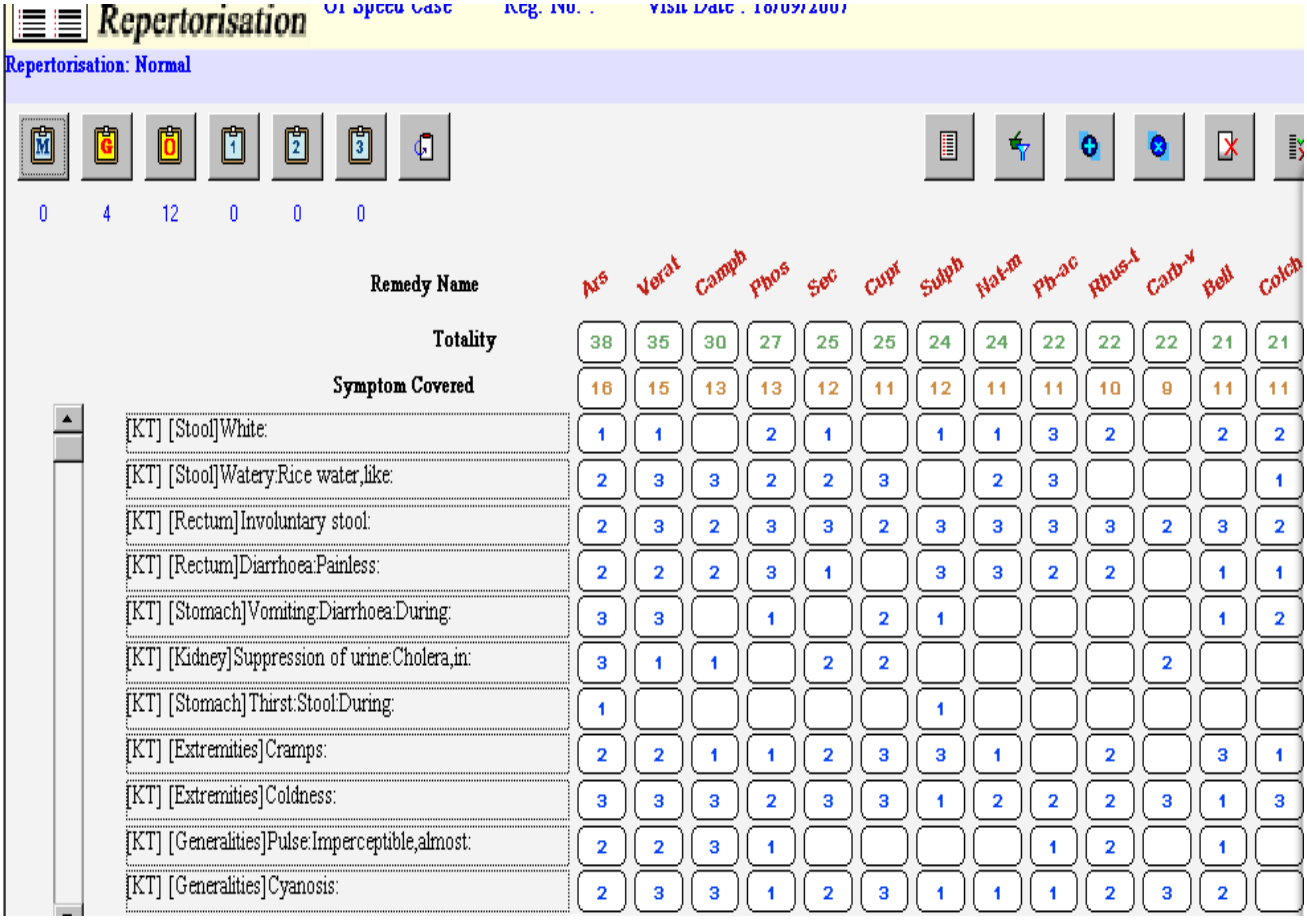
1. From above study it is envisaged that the results of the incidence rate of gastroenteritis among infants/children corroborate with the W.H.O report obtained from a study carried about at institute of pediatrics, Madras.
2. Results indicate that the control of the gastroenteritis in infants/children with Homoeopathic therapy is extremely encouraged in mild/moderate varieties of cases. But attempts should be made to foster/augment the cure rate in severe cases with large number of case study by us in future with different methods of fluid therapy.
3. Before commencement of the peak seasons of this disease, study in prophylactic measures in large scale should be launched by various Government organizations and research organization to give real data to posterity enabling them to carry on prospective study on immunological aspect to indicate the scientificity of Homoeopathic in this respect.

    Along with that, health education should be imparted regarding food hygiene for consumers and food handlers in order to save millions of children all over globe, against the scourge of this dreaded/monstrous disease of infants/children.
4. Cure rate for gastroenteritis in pediatric practice has been fostered by Homoeopathic drugs along with oral rehydration therapy. Hence there is no room for doubt to conclude that these subtle & biologically weak dilutions do act with oral rehydration therapy for mild and moderate types of cases. So it should be universally accepted and practiced by all Homoeopathic practitioners.

MODEL CASE STUDY THROUGH REPERTORISATION ON NOSOLOGICAL DIAGNOSIS

In the next phase of work the commonly occuring symptoms of gastroenteritis are converted into rubrics which are as follows:

K - STOOL: WHITE
K - STOOL: WATERY; RICE WATER, LIKE
K - RECTUM: INVOLUNTARY STOOL
K - RECTUM: DIARRHOEA; PAINLESS
K – STOMACH: VOMITING; DIARRHOEA, DURING
K – KIDNEY: SUPPRESSION OF URINE; CHOLERA,IN
K – STOMACH: THIRST; STOOL, DURING
K – EXTREMITIES: CRAMPS
K – EXTREMITIES: COLDNESS
K – GENERALITIES: PULSE; IMPERCEPTIBLE
K – GENERALITIES: CYANOSIS
K – GENERALITIES: COLLAPSE; DIARRHOEA, AFTER
K - STOMACH: NAUSEA
K – ABDOMEN:PAIN, BURNING
K – CHILL: SHAKING, SHIVERING RIGORS
K – GENERALITIES: EMACIATION



The results obtained from clinical trials and the reportorial results were different so we were put to a dilemma and were in a cross road to decide/to select upon the prophylactic drug hence it was felt imperative to carry on a pilot project to study the efficaciousness of two important top ranking drugs brought by both the processes.

Methodology:

Titira gram panchayat of district Jagatsinghpur of Orissa, a rural ara was selected. This area was comprised of 8 Revenue villages with few hamlets whose total population was 4828 as per 1991 census.

The infant/children population was 1306. Out of them acceptors were 809. Hence acceptors were divided into three groups such as:

1. Chamomilla Test group – Comprising of 250 samples.
2. Ars. alb Test group – Comprising of 250 samples.
3. Control group – Comprising of 309 samples.

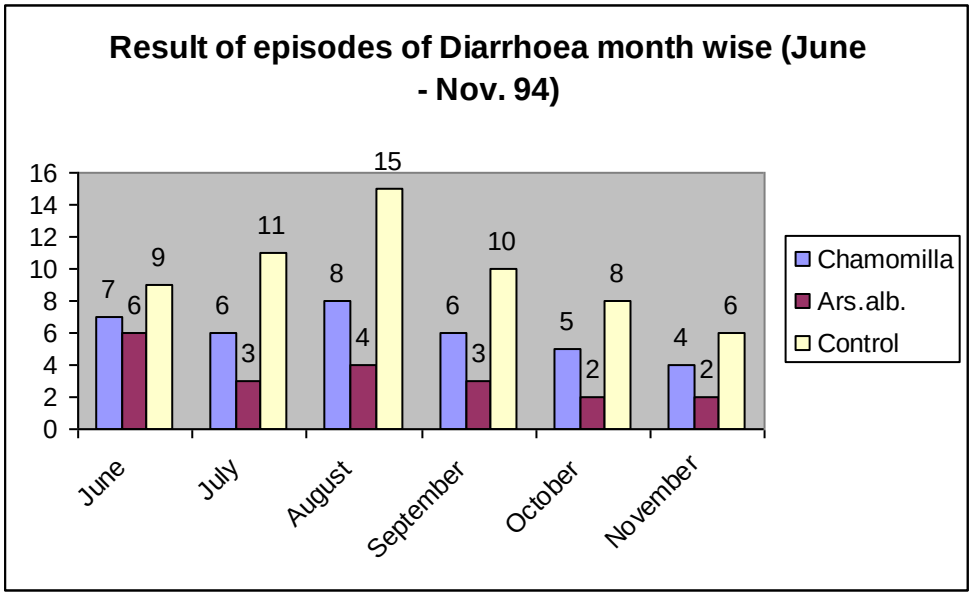
   The medicine was procured from Hahnemann publishing Co., 165 Bipin Bihari Ganguly Street, Calcutta.

Chamomilla and Ars. alb was prescribed in "1M" dilution. Each dose was of 4 globules of No-20. The medicine was given in three doses in three consecutive days.

Above was concluded in the month of May 1994. Occurrence of episodes of diarrhea were recorded.

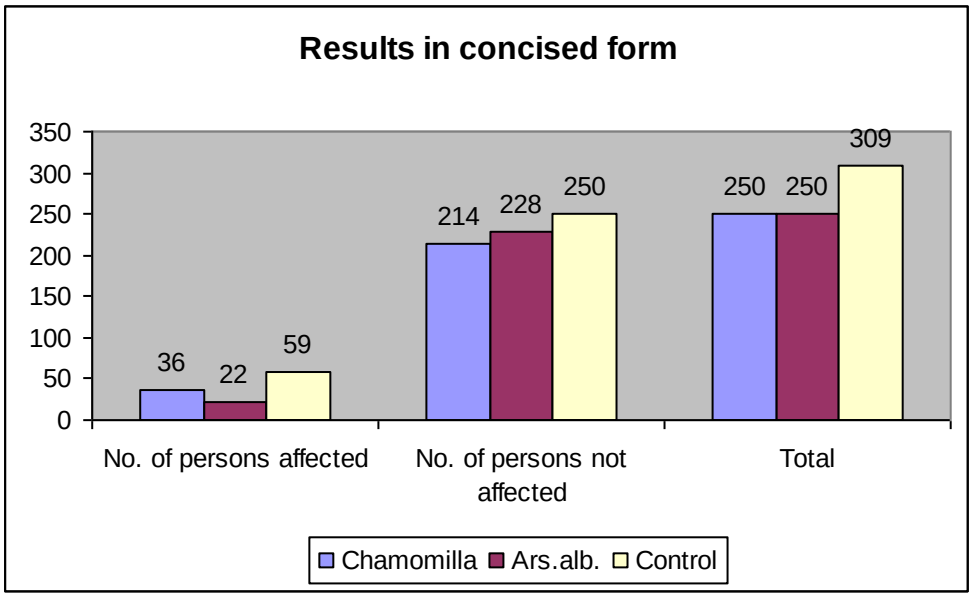
Results of episodes of Diarrhoea month wise from June – November 1994

Experimental groups	June	July	August	September	October	November	Total
Chamomilla	7	6	8	6	5	4	36
Ars.alb.	6	3	4	3	2	2	22
Control	9	11	15	10	8	6	58



Results in concised form

Experimental groups	No. of persons affected	No. of persons not affected	Total
Chamomilla	36	214	250
Ars.alb.	22	228	250
Control	59	250	309



RESULT ANALYSIS

1. The results obtained from chamomilla group and control group were processed for chi-square test. On referring to ($\chi 2$) table with 1 degree freedom on the value of $\chi 2$ for probability of 0.05 is 3.84. The observed value (2.16) is much less and that speaks, the effect of chamomilla group is not superior to control group. The value statistically is not significant.
2. Similarly the results obtained from Ars. alb group and control group were processed for same test. Here the observed value (21.2) is much higher and that speaks, the effect of arsenic album group is superior to control group. The value is statistically significant.
3. Results of chamomilla and Ars. Alb groups were also processed for chi-square test to study its superiority. The observed value (3.88) is higher than 3.84 the value for probability of 0.05 in ($\chi 2$) table and that speaks Ars.alb is superior to Chamomilla.

CONCLUSION

It is envisaged from above results that Arsenic album-1M for prophylaxis against Gastroenteritis in paediatrics practice is the best drug in Homoeopathy.

Out of 250 infants/children 22 have suffered from the disease in spite of prophylaxis. Although statistically the result is significant and we are in the door step to accomplish the goal still our scientific bent of mind and acumen is not satisfied. Further research may be made for the better drug/means to find out the reasons of such occurrences.

To my mind better hygienic conditions/dietetic regulations and other systemic disorders of children can be incorporated as the criteria to reduce the morbidity in the future study.

However with this finding we can vindicate before scientific world that homoeopathy has no less a role, to reckon with at par with the other disciplines to meet this challenge.

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BIBILIOGRAPHY

1. Campbell, A.G.M. Neil Mc Intosh – Fortar and Arneil's "Text book of Pediatrics", 4th ed., E.I.B.S., P-529
2. Edwards, V.R.W., "Davidson's Principles and Practice of Medicine".16th Edition p-420
3. Kent. J.T., Repertory of the Homoeopathic Materia Medica", 6th Edition.
4. Saha, J. "Hompath Software".
5. Viswanathan J. A.B.Desai, "Achar's Text Book of Pediatrics", 3rd Edition, Orient Longman, P-415
6. Ghai, O.P., "Essential Pediatrics" 2nd Edition, intraprint, P-186
7. Beriman, R.E. "Nelson Text book of Pediatrics", 14th Edition, P-662.