SECTION II

M E T H O D O L O G Y

CHAPTER

9	PLAN OF WORK
10	INVESTIGATIONAL MODALITIES
11	MATERIALS
12	ESTIMATION OF ELEMENTAL IRON CONTENT PER TABLET OF FERROUS SULPHATE AND FERROUS FUMARATE
13	DIFFERENT METHODS FOR SERUM IRON ESTIMATION

CHAPTER 9

PLAN OF WORK

Forty patients of iron deficiency anaemia, attending the Out Patient Department of S.S.G. Hospital, Baroda,were selected and admitted for the study.

CRITERIA FOR SELECTION OF PATIENTS

1. Age : Adult
2. Sex : Either
3. Haemoglobin level : 3 to 6 gm %
4. M.C.V. : less than 82 cu.
5. M.C.H. : less than 27 uug.
6. M.C.H.C.: less than 30 per cent.
7. Hypochromasia and Microcytosis in the peripheral blood smear.
8. Marrow studies compatible with that of iron deficiency.
9. No disease other than iron deficiency anaemia.

(10) Cause of anaemia :

(a) Ankylostomiasis
(b) Nutritional
(c) Multiple pregnancies
(d) Bleeding (e.g. piles, Menorrhagia etc.)

(11) Without the signs of failure

(12) No iron therapy within 15 days prior to the hospitalisation.

(13) No salicylate therapy within 15 days prior to the hospitalisation.

(14) An adequate Serum Iron Response to iron administration on first day of treatment.

(15) Co-operative patients who are likely to continue treatment according to the instructions given to them.

NUMBER OF CASES

The total number of cases selected for the purpose was 40. These cases were divided into 2 series of 20 each - Series 'A' and Series 'B' . Series 'A' included all the odd number of cases and these cases were treated with Ferrous Sulphate. Series 'B' included all the even number of cases and these cases were treated with Ferrous Fumarate.

Series 'A' : All odd number of cases treated with Ferrous Sulphate.

Series 'B' : All even number of cases treated with Ferrous Fumarate.

CLASSIFICATION OF CASES

This being a comparative study of two different iron preparations, it was highly desirable to facilitate the comparison of Haematological responses and also of serum iron

responses. Hence the cases were classified into seven "Treatment-groups" according to their Haemoglobin levels as follows :

TABLE NO. 5

CLASSIFICATION OF CASES ACCORDING TO THEIR Hb LEVEL

Group No.	Hb in gm %	Case Number	Case No. Series 'A'	Case No. Series 'B'
1	3.0	1 - 6	1	2
			3	4
			5	6
2	3.5	7 - 12	7	8
			9	10
			11	12
3	4.0	13 - 18	13	14
			15	16
			17	18
4	4.5	19 - 24	19	20
			21	22
			23	24
5	5.0	25 - 30	25	26
			27	28
			29	30
6	5.5	31- 36	31	32
			33	34
			35	36
7	6.0	37 - 40	37	38
			39	40

IMPORTANT CONSIDERATIONS

1. All patients to be hospitalized.
2. Cases with Ankylostomiasis must be first treated with Tetrachlorethylene. Iron therapy to be started only after the stool report is repeatedly negative.
3. Salicylates NOT to be given to any patient all throughout the course of treatment under any circumstances.
4. Mist acid pepsin, ascorbic acid or other vitamin supplement NOT to be given to any patient during the course of treatment.
5. Mist Glucose Oz. 1 T.D.S. to be given to all patients as Placibo.
6. In female patients, the treatment to be started immediately after the stoppage of menstruation in order to eliminate the variations due to the amount of blood loss.
7. In bleeding cases (Piles, Menorrhagia etc.), the bleeding must be checked during the treatment and the patient who bleeds during the treatment must be discarded.
8. Duration of treatment - 3 weeks.
9. Iron preparations to be used:

   (a) Ferrous sulphate (for control)
   (b) Ferrous Fumarate (for trial)

10. Dose of both the iron preparations must be EQUAL in terms of Elemental Iron in mg. per day.

11. Administration of iron preparation under Direct Supervison.

12. Diet : All patients to be given Hospital diet all throughout the course of study as follows :

(i) Diet before starting the iron therapy,

(a) A.F.D. - for vegetarian patients
(b) B.F.D. - for non-vegetarian patients

(ii) Diet after starting iron therapy :

(a) A.H.P.D. - for vegetarian patients
(b) B.H.P.D. - for non-vegetarian patients

IRON THERAPY

1. Iron Preparations :

Two different iron preparations were used :

(a) Ferrous sulphate
(b) Ferrous Fumarate

2. Dosage :

Exsiccated Ferrous Sulphate contains 31-33% Elemental Iron. Ferrous Fumarate contains 32.5 - 33% Elemental Iron.

This being a comparative study of two different iron preparations, ~~it~~ each iron preparation should be administered in equal dosage. Then only the therapeutic efficacy of both these iron preparations can be correctly compared.

Accordingly the tablets of exc. Ferrous Sulphate

and those of Ferrous Fumarate were prepared SPECIALLY in such a way that each tablet of Ferrous Sulphate and Ferrous Fumarate contained 60 mg. of Elemental Iron. 3 Tablets (180 mg. of Elemental Iron) of each iron preparation were given per day to the patients of the respective series - Ferrous sulphate to the patients of series 'A' and Ferrous Fumarate to the patients of Series 'B'. Thus, the dose of both these iron preparations namely, Ferrous Sulphate and Ferrous Fumarate was EQUAL in terms of 'Elemental Iron in mg. per day.'

4. Confirmation of Equal dosage :

In order to confirm that the doses of both the iron preparations were equal in terms of elemental iron in mg. per day, it was necessary to prove that each tablet of Ferrous Sulphate and Ferrous Fumarate contained exactly 60 mg. of Elemental Iron. This was proved by estimating the Elemental Iron content per tablet of Ferrous Sulphate and Ferrous Fumarate. The method for such estimation is described in chapter 12 and the results are presented in the tabular form.

5. Form of Iron preparations :

The iron preparations were administered in Tablet form. Unquoted tablets were used.

6. Composition of the Tablets :

Each tablet of Ferrous Sulphate and Ferrous Fumarate contained only iron (respective iron compound) plus the excipient.

7. Uniform Absorption of Iron :

This is a very important factor because the various serum iron levels after the administration of ferrous sulphate or ferrous fumarate are to be compared. In order to achieve uniform disintegration and uniform absorption of both these iron preparations, uncoated tablets, in either case, were selected. The disintegration time of tablets of both the iron preparations was also EQUAL (5-7 minutes). Rightly says Betterman, "Tablets of Iron salts that are unduly compressed or coated defeat the purpose of iron medication. There will be insufficient time for absorption, since the tablets, before they have become disintegrated, would have traversed those portions of the gut essential for absorption."[17]

8. Iron Administration :

(a) Ferrous Sulphate or Ferrous Fumarate was given to alternate patients and not to selected patients.

(b) Three tablets (180 mg. elemental iron)were given daily,stat ~~fixx~~ after lunch only.

9. Confirmation that the prescribed dose was fully ingested by the patient :

There was a definite tendency on the part of some of the patients to spare and preserve 1 or 2 tablets from the given dose of totally three tablets per day, perhaps for their future use, so that they may not have to spend money for purchasing the tablets immediately after they are discharged from the hospital.

It was possible to disclose this important fact, during the study of 'Trial Cases' by cross-examining the patients about the tablets as to how many tablets they had taken, at what time they had taken, what was the time interval kept in between and so on.

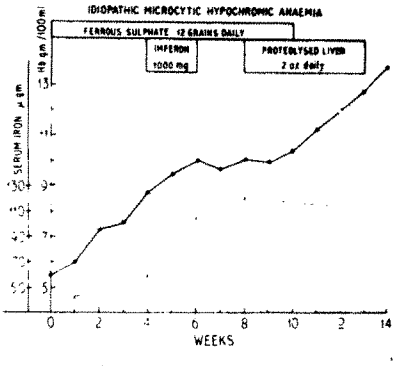
Thus, this was an observed and proved fact. Hence, the tablets were given to the patients and they were asked to swallow the same in my presence. This procedure was practised daily throughout the course of this study.

D I E T

Adequate protein supply is necessary for the synthesis of globin or the protein portion of haemoglobin, and thus for good response to iron therapy.

Cases of microcytic hypochromic anaemia in women are recorded, where the haemoglobin had not increased, with enormous doses of iron and pigments, until the protein intake was considerably augmented.[131]

3c



A case of a woman aged 45 with microcytic hypochromic anaemia and with total plasma proteins of 5.4 gm.%. Although the serum iron returned to normal under iron therapy, full recovery was not obtained until adequate protein was given.

Protein therapy benefits the anaemia in majority of the cases with low plasma proteins.[131] Most of the cases under present study had hypoproteinemia besides anaemia. Therefore, high protein diet was indicated not only to correct hypoproteinemia but also to benefit the anaemia.

(i) Diet before starting the iron therapy :

(a) A.F.D. (vegetarian Full Diet) for vegetarian patients.

(b) B.F.D.(Non-vegetarian full diet) for non-vegetarian patients.

(ii) Diet after starting the iron therapy :

From the first day of starting iron therapy and all throughout the study, all the patients were given high protein hospital diet according to their choice as follows :

(a) A.H.P.D. (Vegetarian High Protein Diet) for vegetarian patients.

(b) B.H.P.D. (Non-vegetarian High Protein Diet)for Non-vegetarianx patients.

The details of A.F.D. and B.F.D. together with the timings are given in tabular form for comparison.

The details of A.H.P.D. and B.H.P.D. together with the timings are also given in tabular form for comparison.

The calorific value, protein content and elemental iron content in A.H.P.D. and B.H.P.D. have been calculated[60] and given in a separate table for comparing the calories, proteins and elemental iron supplied per day to either vegetarian patients or non-vegetarian patients.

TABLE No. 6

A.F.D. and B.F.D.

Time	Item	A.F.D.	B.F.D.
7-00 a.m.	Tea or Milk	1 Oz.	1 Oz.
9-30 a.m.	Bread	2 Oz.	2 Oz.
	Butter	½ Oz.	½ Oz.
	Milk	6 Oz.	4 Oz.
11-30 a.m.	Chapati	3 Oz.	3 Oz.
	Rice	2 Oz.	2 Oz.
	Dal	1½ Oz.	1 Oz.
	Leafy vegetables	2 Oz.	2 Oz.
	Root vegetables	1½ Oz.	1½ Oz.
	Other vegetables	1½ Oz.	1½ Oz.
	Mutton	-	3 Oz.
4-00 p.m.	Tea or Milk	1 Oz.	1 Oz.
7-00 p.m.	Chapati	3 Oz.	3 Oz.
	Rice	2 Oz.	2 Oz.
	Dal (Kathor)	1½ Oz.	1 Oz.
	Leafy vegetables	2 Oz.	2 Oz.
	Root vegetables	1½ Oz.	1½ Oz.
	Other vegetables	1½ Oz.	1½ Oz.
9-00 p.m.	Milk	8 Oz.	4 Oz.

TABLE NO. 7

A.H.P.D. and B.H.P.D.

Time	Item	A.H.P.D.	B.H.P.D.
7-00 a.m.	Tea or Milk	1 Oz.	1 Oz.
9-30 a.m.	Bread	2 Oz.	2 Oz.
	Butter	½ Oz.	½ Oz.
	Milk	12 Oz.	4 Oz.
	Egg	-	1 Egg
11-30 a.m.	Chapati	3 Oz.	3 Oz.
	Rice	2 Oz.	2 Oz.
	Dal	1½ Oz.	1 Oz.
	Leafy vegetables	2 Oz.	2 Oz.
	Root vegetables	1½ Oz.	½ Oz.
	Other vegetables	1½ Oz.	½ Oz.
	Mutton	-	6 Oz.
4-00 p.m.	Tea or Milk	1 Oz.	1 Oz.
7-00 p.m.	Chapati	3 Oz.	3 Oz.
	Rice	2 Oz.	2 Oz.
	Dal (Kathor)	1½ Oz.	1 Oz.
	Leafy vegetables	2 Oz.	2 Oz.
	Root Vegetables	1½ Oz.	1½ Oz.
	Other vegetables	1½ Oz.	1½ Oz.
9-00 p.m.	Milk	10 Oz.	4 Oz.

COMPARP. D.

Time		B. H. P. D.		
		Calo-ries	Protein in gm.	Elemental Iron in mg.
7-00 a.m.	Tea	33	1.2	0.1
9-30 a.m.	Brea	198	6.2	0.6
	Butt	49.5	1.4	0.2
	Mill	132	4.8	0.4
	Egg	98	7.6	1.2
11-30 a.m.	Chap	300	10.2	6.0
	Rice	200	4.8	1.6
	Dal	95	6.3	2.5
	Leaf	22	2.0	7.5
	Root	14	0.25	0.1
	Othe	5	0.25	0.3
	Mutt	330	31.8	4.2
4-00 p.m.	Tea	33	1.2	0.1
7-00 p.m.	Chap	300	10.2	6.0
	Rice	200	4.8	1.6
	Dal	95	6.3	2.5
	Leaf	22	2.0	7.5
	Root	42	0.75	0.3
	Othe	15	0.75	0.9
9-00 p.m.	Mill	132	4.8	0.4
		2315	107.7	49.9

Thus, the table immediately preceding shows that the diet of all the patients (who received either A.H.P.D. or B.H.P.D) was almost similar, and this was particularly true so far as the calorific value, protein supply and elemental iron intake per day were concerned. In a study, Best and Vaidya[16] observed no significant difference in the values of plasma proteins in relation to vegetarian and non-vegetarian diet. Hence, in this respect also the two types of diet may be considered similar. All these considerations were highly essential for the present comparative study. Since the adequate supply of protein has its beneficial effect on the synthesis of the globin or the protein portion of the Haemoglobin, the quality and quantity of protein supply should, ideally, be the same. Moreover, the dietary elemental iron supply must be the same, so that the total intake of elemental iron (dietary as well as medicinal) in any given patient remains constant.

ADMISSION TO THE WARDS

After the initial haemoglobin estimation, the patients were provisionally admitted to the wards. All the male patients were put together in a separate hall in the male ward. Similarly, all the female patients were put together in a separate hall in the female ward. A.F.D. or B.F.D. was prescribed according to their choice. Mist Glucose Oz.1 T.D.S. was also prescribed and a labelled bottle containing 21 Ozs.

of this mixture (for 7 days) was handed over to each patient individually, so that the patients had no more to take any medicament from any of the Nursing Staff. Then a standing instruction was given to the Nursing Staff for not giving any medicament (Particularly Salicylates, iron preparations and drugs containing iron, as they affect the Serum Iron values), to any of the patients under the present study. For this reason the patients were kept together in a group so that by mistake also they may not get any additional medicament. Moreover, the patients were instructed not to take any medicament from anybody except myself.

MANAGEMENT OF THE CASES

1. Psychological Approach :

Each patient was treated highly sympathetically and was assured about his/her good prognosis and also about the free supply of all medicines and diet. Besides this, each patient was re-assured that he/she would not be discharged from the hospital until he/she desired so. All these and allied factors helped in cultivating the nearness and in establishing the doctor-patient relationship.

Whenever a new patient was admitted, the experienced patients used to supply him/her information about the lengthy clinical and investigatory procedure and the number of pricks he/she had to suffer. The new comer used to think for a while, perhaps because of his/her mental upset, that he/she

should request for discharge. But it was only because of the above factors that the mental upset and the desire to go home used to fade away.

2. History Taking :

A detailed history (including the detailed history of diet at home) was taken. In order to maintain uniformity and accuracy, a Proforma was prepared and the history taking and clinical examination of each patient was carried out according to this proforma. The clinical results so obtained were recorded systematically as follows.x

3. History of the Patients :

The findings of the detailed history of all the patients are given in a tabular form in chapter 20 along with total number and the percentage value of each finding.

4. Symptomatology :

The various symptoms of all the patients are given in a tabular form in chapter 21, along with the total number and the percentage value of each symptom.

5. Physical Signs :

The various physical signs found on clinical examination of all the patients are given in a tabular form in chapter 22, along with the total number and percentage value of each sign.

6. Proforma :

A specimen of the Proforma is given below :

P R O F O R M A

(History Taking)

Sr.No.

Series : A/B

Name :

Age :

Sex :

Married : Yes/No.

Occupation :

Address :

Income : Rs. /month

Family Members :

Hospital : S.S.G.Hospital

Ward :

Unit : Medical

Regd. No. :

Date of Admission :

Date of Discharge :

Date of starting treatment :

Day of starting treatment :

CHIEF COMPLAINTS :

A.S.

1. Pain in epigastrium
2. Epigastric distress after food.
3. Nausea
4. Vomiting
5. Constipation
6. Diarrhoea
7. Loss of appetite
8. Dyspepsia
9. Flatulence
10. Heart Burn
11. Dysphagia

B.S.

12. Cough
13. Breathlessness

C.V.S.

14. Palpitation

C.N.S.

15. Tingling & Numbness
16. Neuralgic pains
17. Headache
18. Giddiness
19. Pain in calf Muscles

Miscellaneous

20. Weakness
21. Easy Fatigability
22. Puffiness of face
23. Edema
24. Pallor of skin
25. Itching of skin
26. Fever
27. Backache

ORIGIN, DURATION & PROGRESS :

The patient was alright before . Thereafter, he/she started getting the above-mentioned complaints in order mentioned by the figures in red ink. Out of these, No. are the presenting complaints. The onset was/was not insidious. The progress was/was not gradual. He/She was/was not treated for the same.

PAST HISTORY :

H/O similar previous illness.

H/O Worms, Dysentery, Haematuria, Haemoptysis, Haemetemesis.

H/O Bleeding P.V., P.R., Other site.

H/O T.B., V.D., Diabetes, any other chronic infection.

H/O Operative procedures like Hysterectomy.

H/O Prescribed Medication - Any Treatment, particularly Iron therapy and Salicylate therapy - during last 15 days or even before. Duration of such therapy:

H/O Self Medication - taking or having taken any drug, particularly Salicylates - during last 15 days or even before. Duration and/or Frequency of such Medication :

PERSONAL HISTORY :

(i) Diet :

Chapaties	/day	(each of	oz.)
Loafs	/day	(each of	oz.)
Rice	oz/day		
Dal	oz/day		
Curry	oz/day		
Kathor	oz/day		
Leafy vegetables	oz/day		
Root vegetables	oz/day		

Other vegetables	oz./day
Milk	oz./day
Curd	oz./day
Butter Milk	oz./day
Ghee (Pure/Vegetable)	oz./day
Oil	oz./day
Juggery	oz./day
Fruits	oz./day
Eggs	oz./day
Mutton	oz./day
Fish	oz./day

(2) Micturation : D/N Burning : Yes/No

(3) Bowels : Regular/Constipation/Diarrhoea.

(4) Sleep : Adequate/Inadequate.

(5) Habits : Pan/Tobacco/Smoking

(6) Barefootedness : Yes/No

(7) Nature of Work : Labourer/Farmer/Gardner/Business/Service/House-hold work/others.

(8) Menstrual History :

(a) Regular/Irregular-Early, Late, Amenorrhoea since...

(b) Flow-Scanty/Moderate/Profuse.

(9) Obstetric History :

*(a) , , , Living / Dead

(b) Interval between each ... ... respectively.

(c) Last Delivery before years.

---

* Abortion, Miscarriage, Still birth and Full term normal delivery respectively.

(10) Lactation History :

(a) Lactation : Yes/No

(b) Duration :

(c) Weaning :

GENERAL EXAMINATION :

Well/Fairly/Poorly built

Well/Fairly/Poorly nourished.

Conscious.

Apathetic : Yes/No

Conjunctiva : Pale/Pink

Tongue : Pale/Pink, Soreness, Baldness

Throat : Congested/Non-congested.

Tonsils : Normal/enlarged.

Nails : (a) Colour : Pale/Pink.

(b) Shape : Spooning/ Normal/ Clubbing.

Skin : (a) Normal/ Pallor/Yellowish tinge/Pigmentation.

(b) Inelastic/Wrinkled/Dehydration/Edema-Degree*

Hairs : Normal/Dry/Scanty/Graying - at the age of years.

Bones : Tenderness over sternum/shin of tibia.

Lymph Glands :

Temperature : ^{o}F.

Pulse : /Minute.

Respiration : /Minute.

---

* Degree of Edema : I degree - Oedema over feet.
III degree - generalised anasarca.
II degree - in between the two.

B.P.: m.m. of mercury

Weight : Initial (1st day of treatment) lbs.

At the end of 1st week lbs.

At the end of 2nd week lbs.

At the end of 3rd week lbs.

SYSTEMATIC EXAMINATION :

A.S. :

Teeth

Gums - Gingivitis/Bleeding.

Mouth: Stomatitis.

Tongue : Pale/Pink/Red/Soreness/Baldness/Glossitis.

Shape of abdomen : Normal/bulging/retracted.

Tenderness in epigastrium/other region.

Free fluid : Present/Absent.

Liver : Palpable/Not-palpable/Tender/Not-tender.

Spleen : Palpable*/Not-palpatle/Tender/Not-tender.

P.R. Examination :

(a) Inspection

(b) Digital

(c) Proctoscopy

P.V. Examination :

(a) Inspection

(b) Speculum

(c) Bimanual

---

* + 1 finger below the costal margin.
++ 2 finger below the costal margin.
+++ 3 to 4 finger below the costal margin.
++++ More than 4 fingers below the costal margin.

C.V.S. :

Precordial Examination :

Inspection :

Precordium : Normal/Bulging /retraction.

Apical Impulse : (a) Visible /Invisible
(b) Localised/Diffused
(c) Position: Normal/Shifting

Other Pulsations: Present/Absent

Visible veins : Present/Absent

Palpation :

Apical Impulse : (a) Palpable in .... left Intercostal space -- inches inside/outside the midclavicular line.

(b) Character : Normal/Slapping/Heaving

(c) Rate :

(d) Rhytham :

Thrill : Palpable/Not palpable

Percussion :

Heart borders : (a) Left border

(b) Upper border

(c) Right border

(d) Lower border

Liver dullness :

Auscultation :

Area	I sound	II sound	Murmer
(a) Mitral			
(b) Pulmonary			
(c) Aortic			
(d) Tricuspid			
(e) Left Para-sternal border			

Extra-Precordial Examination :

Neck veins : Visible/invisible

Pulse : /minute

B.P : m.m.of mercury.

Nails : Clubbing Present/Absent.

Liver : palpable/not-palpable/tender/not-tender

Edema over feet : (a) Present/Absent

(b) Pitting on pressure/not-pitting

R.S. :

Breath sounds :

Foreign sounds :

C.N.S :

Mental disturbances :

Tendon Reflexes : Right Left

Biceps

Triceps

Supinator

Knee

Ankle

Sensations :

Tenderness over the calf muscles: Present/Absent

GENITO-URINARY SYSTEM :

REMARKS : Provisional Selection of the case:
Selected/Not selected.

....

7. Provisional Selection of the Patient :

After taking the detailed history and after conducting thorough clinical examination, it was decided whether the patient satisfied all the clinical requirements mentioned under the heading "Criteria for Selection of Patients," in earlier part of this chapter. Accordingly, the patient was either selected provisionally for the study or not selected, i.e. the patient who, on clinical examination, satisfied the clinical requirements was provisionally selected and rejected if otherwise.

8. Haematological Examination :

The patient provisionally selected for the study was then subjected to the haematological examination (Haemoglobin, R.B.C., P.C.V., indices and sternal Puncture) to find out whether the patient satisfied the haematological requirements mentioned under the heading, "Criteria for Selection of Patients." Accordingly, the provisional selection of the patients was either finalised or cancelled.

9. Final Selection of the Patients :

The patient, who,on haematological examination, satisfied all the haematological requirements mentioned under "Criteria for Selection of Patients," was finally selected for the study and rejected, if otherwise.

10. Stool Examination :

Then the first investigation carried out was stool examination. For this purpose, a saline purgative (Mist Alba Oz.1 H.S.) was given to the patient and was explained to collect his/her second (liquid) stool. The stool was examined thoroughly for the presence of parasites and occult blood. The stool was, therefore, subjected to (a) Simple Method, (b) concentration method, and (c) Benzidine Test. The examination was completed within two hours of defaecation.

(a) Simple Method (Direct Wet Preparations) :

From each specimen of stool two preparations were made - One Saline and other iodine preparation (3 per-cent Lugol's iodine). In majority of the cases, Ova of Ankylostoma were detected in the first simple preparation. In cases where this was not so, another simple preparation was made and the stool was re-examined thoroughly and Ova of Ankylostoma were detected. If this preparation was also negative, which was so in only one or two patients, the stool examination was subjected to the concentration method.

(b) Concentration Method (Brine Flotation Technique) :

Helminthic eggs are of different weights and can only float in a solution whose specific gravity is higher than that of eggs. Thus, ir flotation techniques,

the best yield is obtainable when a solution with a specific gravity 1200 (saturated solution of common salt) is used.[36]

Principle : The flotation technique is based on the fact that a saturated solution of common salt has a specific gravity higher than most helminthic eggs. Hence, when the faeces is mixed with this solution, the eggs float on the superficial portion of the fluid and the faecal detritus sinks to the bottom.

Technique : About 1.0 gm. of mixed sample of faeces was emulsified in about 20 ml. of saturated salt solution. The emulsion was then transferred to a 25 ml. cylinder (without spout). With a pipette more salt solution was added until a convex meniscus was formed. It was allowed to stand for 30 minutes. Then, the meniscus was touched with a cover glass to remove one drop. It was mounted between the cover glass and a micro slide. Second similar preparation was made with a drop of Lugol's iodine. Both the preparations were carefully examined under low and high power of microscope for the detection of cyst and ova.[1]

(c) Benzidine Test for Occult Blood :

Precautions : Adequate precautions[4] were taken to see that patient eats no animal blood, as in meat, for at least three days before the test; does not bleed

from the gums, as when he brushes his teeth; does not take aspirin in any form, does not suffer from piles and does not take iron containing drug or soup prior to the test.

As mentioned previously, B.F.D. (non-vegetarian full diet) was prescribed for non-vegetarian patients on the day of admission. The patient started getting this diet from the next day (Lunch time) before which the stool sample was already collected (in the morning) for examination.

Test : In a test-tube, a moderately thin emulsion of uniformly mixed sample of faeces was prepared in 3 ml. of water. It was boiled for 3 minutes(to destroy oxidases) and cooled. A penknife pointful of benzidine was dissolved in 2 ml. of glacial acetic acid (approximately saturated solution). To this, was added 3 ml. of boiled specimen and few drops of fresh hydrogen peroxide. A blue colour within 5 minutes indicated the presence of blood.[23]

11. Treatment of Ankylostomiasis :

Considering the figures of daily blood loss in cases of ankylostomiasis (chapter 8), it was of utmost importance to check and prevent the blood loss and also iron loss before starting the comparative study i.e. before starting the respective iron therapy. Unless the iron loss is prevented, the correct figures about the therapeutic utility of the two iron preparations viz. Ferrous Sulphate and Ferrous Fumarate

under study can neither be expected nor can be obtained.

Hence it was at this initial stage of study that the cases having Ankylostomiasis were treated for the same. The infestation was thoroughly treated with Tetrachlorethylene as follows :

Baroda
Date:

For Mr. X

℞

Tetrachlorethylene m.45

Divide in capsules No.3

Signa : 1st capsule to be taken at 6-00 a.m.
2nd capsule to be taken at 6-30 a.m.
3rd capsule tc be taken at 7-00 a.m.

Dr. A.B.C.
M.B.B.S.

Baroda
Date :

For Mr. X

℞

Magnesium Sulphate ℥ IV

Magnesium Carbonate ℥ II

Syrup Simplex ℥ I

Aqua q.s. add ℨ I

Misce fiat Mistura

Mitte tale dose No.1

Signa : One dose to be taken at 9-0 a.m.

Nil by mouth till 2 motions.

Dr. A.B.C.

M.B.B.S.

This treatment was repeated on 3rd day and on the 5th day. Meanwhile all the patients were instructed to take plenty of ~~xxxxxxxxx~~ sugar-cane juice.

The irradication of the parasites was confirmed by repeated stool examination on the 10th day, by simple method

(saline and iodine preparations) and also by concentration method (Saline and Iodine preparations). This time also the samples of stool were collected after the administration of saline purgative and the examination was completed within 2 hours of defaecation.

The foregoing description reveals the 'Preparation of patients.' Each patient was prepared in an exactly identical manner. The patient so prepared was then ready for undergoing the Initial Investigations, and then for receiving the respective iron therapy.