Iron Deficiency Anaemia & Ferrum Phosphoricum: A Systematic Review

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ABSTRACT

Anaemia is defined as a reduced number of red blood cells (RBCs) or less than the normal amount of hemoglobin (Hb) in the blood. Ferrum phosphoricum is a homoeopathic medicine which improves the haemoglobin, in anaemic population. The objective of this review was to assess the effects of Ferrum phosphoricum in anemic patients. Searches were performed using different databases and authentic literatures from year 2000 to till date. We retrieved 31 studies from the different databases and internet sites searches. After manually removing 08 duplicate studies. Seven reviewers independently screened 23 articles out of which 18 studies were excluded &05 studies were included in current review by applying modified down and black checklists. The primary reasons for excluding studies were as follows: only abstract articles, in vivo & vitro studies, IDA with other clinical, articles in other languages & not original studies. Limited researches have been done on present topic which requires further researches. There are various literatures available in homoeopathic Materia Medica and repertory but conducted clinical trials are limited. There is not enough evidence to reliably assess the possible role of homeopathy in iron deficiency anaemia. As well as randomized trials, there is a need for observational data to document the different methods of homoeopathic prescribing and how patients respond.

Keywords: Ferrum phosphoricum, Iron deficiency anaemia (IDA), Homoeopathy, Modified down and black checklist, Haemoglobin (Hb).

INTRODUCTION

Anaemia is defined as reduced count of red blood cells or less than the normal amount of hemoglobin (Hb) in the blood. It can also be defined as a lowered ability of the blood to carry oxygen.

Iron deficiency anaemia is universal health issue Iron deficiency anaemia is characterized by a defect in haemoglobin synthesis, resulting in hypochromic and microcytic red blood cells. Iron deficiency can result either due to less nutritional supply, increased demand or blood loss due to any reason. Iron is an important micronutrient which is essential for various functions like cellular growth and differentiation, oxygen binding, transport and storage, enzymatic reactions, immune function, cognitive function, mental and physical growth etc. Hence deficiency of iron can affect mental and physical growth which leads to decreased in learning capacity and daily activities.
IDA involves population of all age groups and both gender but more common in adolescence girls and pregnant women which leads to serious health problem. Anemia during pregnancy can significantly affect maternal health and increase in perinatal morbidity which is responsible for intra-uterine growth retardation and pre-term delivery. Similarly IDA in adolescent girls affects their physical work capacity and reproductive physiology because of increased iron demand, menstrual blood loss and infections.

According to a World Health Organization (WHO) 53% of all women have anaemia as per the National Family Health Survey 2015-2016 in India. Among this the prevalence of anaemia in adolescent girls (15-19 years) is 56%.

Homeopathy is one of the most widespread and most effective forms of complementary or alternative medicine. Although exact data on the frequency of use of homoeopathy in anaemia patients is not available, surveys among general practitioners, indicates that a significant proportion might seek additional advice from homoeopaths. The aim of this systematic review was to evaluate whether homoeopathic medicine Ferrum phosphoricum have a therapeutic action on the Iron deficiency anemia because no systematic review has yet been done to evaluate the evidence regarding homoeopathic treatment strategies in anemia.

Ferrum phosphoricum is a specific homoeopathic medicine for Anemia which increases the haemoglobin level and it also break the tendency of low serum ferritin levels in blood. Ferrum phosphoricum attract the oxygen gives tonicity to circular fibers of vessels to contract and thus equalizing the circulation & also has action on intestinal villi to absorb, regulation of bowel movements, utilization of nutrients, micronutrients & reduction in iron intolerance. Thus Ferrum phosphoricum improve iron absorption from dietary sources or iron supplements and increases haemoglobin levels.

**Objectives**
The objective of this review was to evaluate the efficacy and effectiveness of homoeopathic medicine Ferrum phosphoricum in Iron deficiency anaemia.

**METHODS**
**Search and Selection Criteria**
Computerized literature searches were performed to identify all clinical trials (RCT, non RCT), based on homoeopathic medicine Ferrum phosphoricum in Iron deficiency anaemia. Databases in present review were MEDLINE, Embase, CINAHL, AMED, PubMed, Google Scholar, Sci-Hub, Clinical Trials. Gov from 2000 to till date. Total 31studies were searched and out of which only 05 studies fulfilled the selection criteria. The entire material was screened for this review. Furthermore, our own extensive files as well as books on homeopathy and IDA were searched for relevant data. Language used for publication was strictly in English.

Clinical trials of homoeopathic medicine Ferrum phosphoricum along with other homoeopathic therapeutics with control group were included in this systematic review. Trials with Ferrum phosphoricum as one of several remedies & Ferrum phosphoricum as single remedy, or studies in which Ferrum phosphoricum had been administered concomitantly with other medicines were included.

All studies were read in full by all seven researchers. Data were extracted independently in a standardized, pre-defined fashion (Table 1). Methodological quality of the included trials was assessed using the score according to Modified Methodological Quality checklist developed by Downs & Black, 1998.

**SELECTION CRITERIA:-**
**Inclusion criteria:-**
- IDA with homoeopathic intervention.
- Both gender of all age groups.
• Articles based on homoeopathic medicines and IDA of last 18 years.
• Language strictly English only.
• All RCT and non RCT based on homoeopathic medicines and IDA containing full text articles was included in the review.

Exclusion criteria:-

Table 1: Summary of Included Review Articles.

<table>
<thead>
<tr>
<th>Author, Year, Country</th>
<th>Design</th>
<th>Sample, Recruitment, Setting</th>
<th>Intervention</th>
<th>Control</th>
<th>Outcome Measures</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prashant Tamboli et al. 2015, India</td>
<td>Experimental study single blind randomized placebo control trial</td>
<td>Multi stage sampling antenatal care in rural population Recurrence n =60, Setting: Dr. M. L. Dhwale Memorial Homoeopathic Institutes Bhopoli Unit.</td>
<td>Group A-Ferrum phosphoricum &amp; iron supplementations=41 Group B-Placebo &amp; iron supplementation=19</td>
<td>Group A-Ferrum phosphoricum &amp; iron supplementations=41 Group B-Placebo &amp; iron supplementation group: 41 patients Group B-Placebo &amp; iron supplementations=19 patients. 1 patient from group B was dropped</td>
<td>Hb levels in Pregnant women confirmed with USG in second or third trimester, suffering from mild to moderate anemia with Hb ranging from 7 to 10 gm%. Ferrum phosph6X decrease the risk of iron deficiency anemia in second &amp; third trimester during pregnancy &amp; sustain the Hb levels in all trimesters without causing any adverse effects.</td>
<td></td>
</tr>
<tr>
<td>Dr. Parth Aphale 2017, India</td>
<td>Non randomized</td>
<td>n =30, Female patients from age group 17-20 yrs Recruitment : structured interview session Setting: Dr. D.Y. Patil Homoeopathic Medical College &amp; Research Centre, Pune.</td>
<td>Ferrum phosp 3x</td>
<td>No control group</td>
<td>Hb%, Iron level, Reduction in the symptoms. The statistical analysis proves that Homoeopathy is significantly useful in these 30 cases of Iron Deficiency AnemiaOut of 30 cases 24 cases i.e. 80% showed marked improvement in symptoms. So Ferrum Phos 3X is very much useful in treatment of Iron Deficiency Anemia</td>
<td></td>
</tr>
<tr>
<td>Dr. Mamtha A. Gundimi 3 yrs from 2009 to 2012 India.</td>
<td>A quasi experimental pre and post treatment without control group.</td>
<td>30 cases were included by screening test (Hb – 9 to 11 gm %, MCV, MCH, Peripheral smear) Patients were follow up for 6 months and the test was repeated after 3 months and 6 months. Setting: Father Muller Homoeopathic Medical College, Mangalore.</td>
<td>Constitutional with different potencies from 30C to 1M depending on patients susceptiblity Arsenic album, Calcarea carbonicum, Ferrum met, Ferrum phosphoricum, Phosphorus, Pulsatilla, Lycopodium, Sepia, Natrum muriaticum, Silicea.</td>
<td>No control group</td>
<td>ANOVA test was performed after the study. Conclusion from this study was drawn that constitutional medicines were more effective as compared to constitutional along with lecithin. It was found that more prevalence in 21 to 30 years of age group, along with female predominance. Most common potency ranged from 200C to 1M. Pulsatilla was most indicated remedy.</td>
<td></td>
</tr>
</tbody>
</table>
**TABLE 1 to be continued…**

<table>
<thead>
<tr>
<th>Name of Repertory</th>
<th>Constituional medicines were prescribed using different potencies ranging from 6C to 1M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. S.K. Chaitnaya Nandamudi 2010, India.</td>
<td>Alumina, Ferrum phosph, Ferrum met, Silica, SulphurPuls, Phos, Natrum Stram, Calc c, Cina, Calc p, and Lyco.</td>
</tr>
<tr>
<td>Dr. Anita Patil et al. 2014, India.</td>
<td>Ferrum phosphos3x, 4 tabs twice a day along with constitutional medicine.</td>
</tr>
<tr>
<td>Non randomized study.</td>
<td>No control group.</td>
</tr>
<tr>
<td>Randomized Control trial, Open label, parallel group study.</td>
<td>Constitutional remedies were effective in treatment of IADA. Ferrum phosph was the most indicated remedy in this study.</td>
</tr>
<tr>
<td>Total 219 girls were screened, 9 were excluded due to severe menorrhagia.</td>
<td>Results of the study showed that most of the patients were falling in the age group 8-11 years. Female child was found to be predominant.</td>
</tr>
</tbody>
</table>

**TABLE 2 : Rubrics related to IIDA from different repertories :**

<table>
<thead>
<tr>
<th>NAME OF REPERTORY</th>
<th>RUBRICS &amp; SUB RUBRICS MEDICINES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A CONCISE REPERTORY OF HOMOEOPATHIC MEDICINES BY: DR. S.R. PHATAK</strong></td>
<td><strong>GENERALITIES</strong> - Anaemia, chlorosis, etc. - Ars Calc calc-p CHIN FERR kali-c Nat-m nit-c nux-m Phos Puls Sulph.</td>
</tr>
<tr>
<td><strong>A SYNOPSIS KEY TO THE MATERIA MEDICA BY: C. M. BOGER</strong></td>
<td>A - Anaemia - ARS CALC Calc-p CHIN FERR ferr-ar Graph Kali-c lac-d lyc. mang.med nat-c NAT-M Nat-ac Nux-v Phos pic-ac plat.pb Puls senec sep truf-x.</td>
</tr>
<tr>
<td><strong>DR. S.R. GROUP STUDY</strong></td>
<td>Group A - Ferrum phosph with Constitutional medicine. Group B Only Constitutional medicine. Group C - Control group.</td>
</tr>
<tr>
<td><strong>CONTROL GROUP</strong></td>
<td>Hb% constitutional medicine with Ferrum phosph has shown improvement in Hb%.</td>
</tr>
</tbody>
</table>

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ANAEMIA: (44) 1 acet-ac, 1 alet, 1 alet, 1 arg-n, 1 ars, 1 ars-ar, 1 ben-z, 1 calc-p, 1 carbo-n, 1 cas, 1 chin, 1 chlor, 1 cina, 1 cyc, 1 ferr, 1 ferr-ar, 1 ferr-m, 1 helon, 1 ip, 1 ind, 1 kali-bi, 1 kali-c, 1 kali-p, 1 lac-d, 1 merc, 1 merc, 1 nat-m, 1 nat-n, 1 ojy, 1 oxy, 1 petr, 1 pic-ac, 1 ph, 1 phls, 1 pulb, 1 rub, 1 sil, 1 stann, 1 stroph, 1 sulph, 1 tab, 1 thyr, 1 uurt, 1 uvet

Table to be continued...
RESULTS

Search results

We retrieved 31 studies from the different databases and internet site searches. After manually removing 08 duplicate studies. Seven reviewers independently screened 23 articles out of which 18 studies were excluded & 05 studies were included in current review by applying selection criteria (Figure 1). The primary reasons for excluding studies were as follows: only abstract articles, in vivo & vitro studies, IDA with other clinical articles in other languages & not original studies. Ultimately, two randomized studies & three non-randomized studies were included in the current review.
Study characteristics:
Participants
In present review 2 studies were on randomized control trials out of which one study was on antenatal care between second & third trimester which were diagnosed as mild to moderate anemia (Hb% = 7-10 gm%) & another study participants were adolescents girls age group between 10-18 years with (Hb% = <12gm%) were included. 03 studies were non randomized out of which participants in one study recruited were adolescent age group between 17-20 years & diagnosis was done on the basis of Hb%, Iron level & symptoms of IDA. Second study were conducted on adult age group between 14-60 years included in study after assessing (Hb = 9-11gm%, MCV, MCH, MCHC, Peripheral smear). In third study participants were enrolled only of pediatric age group between 5-14 years by assessing (Hb% = 5-11 gm%), clinical history & examination.
Methodological assessment
Assessment was done by using Modified Methodological Quality Checklist developed by Down and Black, 1998 by summarizing methodological characteristics of all included studies. Modified Methodological Quality Checklist of Downs & Black final score on the quality of 05 included studies ranged from 0 to 9 which includes 2 RCT & 3 Non RCT studies. Scores for each of the five factors devised which varied from 0 to 9 for quality of reporting (maximum score = 11), 0 to 3 for external validity (maximum score = 3), 0 to 5 for internal validity bias (maximum score = 8), 0 to 3 for internal validity confounding (maximum score = 6) and all studies received a 0 for power calculation (maximum score = 1).

Table 4. Modified Downs & Black Checklist Score

<table>
<thead>
<tr>
<th>Scoring</th>
<th>RCT 1</th>
<th>RCT 2</th>
<th>Non RCT 1</th>
<th>Non RCT 2</th>
<th>Non RCT 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q.1 to 10 for quality of reporting (maximum score = 11)</td>
<td>9</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>6</td>
<td>38</td>
</tr>
<tr>
<td>Q.11 to 13 for external validity (maximum score = 3)</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Q.14-20 for internal validity bias (maximum score = 8)</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>Q.21-26 for internal validity confounding (maximum score = 6)</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Q.27. power maximum score 1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td>16</td>
<td>17</td>
<td>12</td>
<td>15</td>
<td>81</td>
</tr>
</tbody>
</table>

Figure 2. Risk of bias assessment based on Modified Downs & Black Checklist
DISCUSSION
After searching so many databases total 31 researches were found. Out of which only 05 studies were included in present review. Methodological quality of the included trials was assessed by using modified down and black checklists.

The two randomized controlled trials showed the effectiveness of Ferrum phosphoricum in iron deficiency anaemia where one of the study showed that Ferrum Phosphoricum 6X decreases the risk of iron deficiency anaemia in second & third trimester during pregnancy & sustain the Hb levels throughout the pregnancy without causing any adverse effects. Second study was conducted on adolescence girls revealed that constitutional medicine along with Ferrum phosphoricum has capacity to increase Hb level in Iron deficiency anaemia. This review also included three non RCT suggesting that the effectiveness of a standardized homeopathic medicine Ferrum phosphoricum is capable of improving the Hb levels in iron deficiency anaemia. Insufficient data is available on Ferrum phosphoricum in IDA, so further studies are required to see the effectiveness of Ferrum Phosphoricum.

CONCLUSION
The result indicates that there was increase in haemoglobin levels in cases of IDA patients. Therefore it can be concluded that the homeopathic medicine Ferrum phosphoricum may have beneficial effect in improving the Hb level in IDA patients. Therefore it is a good choice as specific remedy for IDA. Since limited researches have been done on present topic which requires further researches.

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Conflict Of Interest
The authors declare that they have no conflict of interests.

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