MANAGEMENT AND TREAMNET DEFICIENCY ANAEMIA WITH TRIKATRAYADI LAUHA

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Abstract

Anaemia is an important public health problem in India. Complementary and alternative systems/traditional medicines can also be explored for the control of Anaemia apart from the existing platforms. Interventions with various herbal and iron formulations have been reported in Ayurveda. Hence, this review was aimed to explore the effect of various ayurvedic drugs on Anaemia from the existing literature. Literature was searched in PubMed, Google Scholar, Cochrane Library, Medline (Ovid), IndMed and by cross-referencing the articles. The search was restricted to original research articles published in the English language from January 2005 to June 2018 among human subjects. Randomized and nonrandomized control trials were included in this review, which assessed the effectiveness of ayurvedic drugs on improvement in Haemoglobin as well as subjective parameters such as weakness, anorexia, and pallor.

Key words: '*Trikatrayadi Lauha'*, 'Anaemia' and 'Ayurveda'

Introduction

Anaemia is an important public health problem throughout the world. Globally, around 1.62 billion people are affected by Anaemia which corresponds to one-fourth of the world's population.[1] The World Health Organization (WHO) defines Anaemia as "a condition in which the number of red blood cells or their oxygen-carrying capacity is insufficient to meet physiologic needs."[2] The global prevalence of Anaemia 2011 estimated that the prevalence of Anaemia among children (42.6%) Iron deficiency is the most common cause of Anaemia in LMICs, however micronutrient deficiencies such as folate, Vitamin B12 and Vitamin A deficiencies and other conditions such as inflammation, parasitic infections and inherited disorders can also cause Anaemia.[4] Consumption of diet rich in iron could be the ideal way for control of Anaemia in the majority of the population. However, poor intake of dietary iron and the presence of iron absorption inhibitors necessitates iron supplementation.[5] In India, oral Iron-Folic Acid (IFA) tablets are supplemented to high-risk populations such as pregnant and lactating women, under-five children (IFA syrup), children of 6–10 years, adolescents and women of reproductive age group.[6] However, the undesirable side effects of oral IFAs, such as epigastric discomfort, nausea, gastritis, diarrhoea, or constipation, leads to poor adherence to oral IFA supplements.[7] The poor adherence to IFA tablets was evidenced by studies conducted in various parts of India and also in NFHS-4 where only 30% of the pregnant women consumed at least 100 IFA tablets.[3,8,9] Therefore, there is a dire need for alternative methods of oral iron supplementation with lesser side effects to increase the adherence among the target population. Complementary and Alternative Medicines or Traditional Medicines, which includes Ayurveda, Unani, Siddha, and Homeopathy (AYUSH) has been widely in

India since the ancient period. Acknowledging the wider acceptance of AYUSH, Government of India has integrated the traditional systems of medicine (AYUSH) with the allopathic system, especially in rural areas. Each public health sector facility has a separate department for AYUSH and the AYUSH medical officer manages a wide range of diseases.[11]

Review of Literature:

Among the AYUSH system of medicines, Ayurveda refers to "Science of life" or "Science of longevity," which is being practiced in India since 2500 BC. Around 70% of the rural population in India follows the Ayurvedic system of medicine. Hence, the Ayurvedic system can be explored for control of high burden of Anaemia in India. In Ayurvedic classical texts, Anaemia is referred to as "Pandu" meaning pallor, which is one of the common symptoms of Anaemia.[14] An Ayurvedic drug "Tablet *Punarvadi Mandur* (ISM Preparation of Iron)" has already been added in Accredited Social Health Activist (ASHA) drug kit for management of Anaemia in pregnancy. The ayurvedic system has also indicated the use of various iron-containing and non-iron containing herbal formulations for the management of Anaemia. Hence, this review aims to explore the effect of various ayurvedic preparations in management Anaemia. Both iron containing and non-iron containing Ayurvedic preparations were studied to assess their effect on Anaemia. All ayurvedic drugs were produced in a laboratory and were provided to the participants. However, in one study, the participants were asked to purchase the drugs. Of the seven RCTs, two compared iron-containing Ayurvedic preparations with an allopathic oral IFA tablet and three RCTs compared non-iron containing Ayurvedic preparations with oral IFA tablet. One RCT compared Ayurvedic iron preparation with a non- Ayurvedic iron preparation. All eight non-RCTs used iron-containing Ayurvedic drug without any control group. The content of iron was mentioned in one RCT and two non-RCTs. A study on children decided the dosage of the drug according to body weight,[18] while a fixed dosage was prescribed to all participants in the rest of the studies. The drugs in some studies were administered along with a vehicle to enhance iron absorption and increase digestibility. Various vehicles used included lemon water, buttermilk, honey, ghee and ginger extract. The duration of intervention ranged from 28 to 120 days and the duration of observation after intervention ranged from 28 days to 180 days. Deworming before the intervention was done among the study participants in all the studies. To ensure compliance, weekly, fortnightly and monthly follow-ups were done in a few studies. Haemoglobin estimation the method used for Haemoglobin estimation varied between studies. Dacie and Lewis method was used in one study, cyan-meth Haemoglobin in two studies and the method of Haemoglobin estimation was not mentioned in other studies. Outcome assessment Eleven out of fifteen studies assessed the effect of ayurvedic drug based on both objective and subjective parameters and the remaining studies assessed only the objective parameters. Objective parameters include various haematological parameters-Haemoglobin, serum ferritin, MCV, MCH, MCHC and TIBC. Subjective parameters were the symptoms of "Pandu," Anaemia, which include, *Dourbalya* (weakness), *Aruchi* (anorexia), *Arohanayasa* (exertional dyspnoea), *Angamarda* (fatigue).

Discussion:

Effect on haematological parameters All studies have assessed the effect of Ayurvedic drugs on Haemoglobin concentration and reported an increase in Haemoglobin level after the intervention. However, increase in Haemoglobin was not statistically significant in

four studies. Sharma et al. reported a maximum increase by *Sarva-jwara-hara Lauha*, which contained 145.5 mg elemental iron and was administered with honey as a vehicle for 30 days. Increase in Haemoglobin from 7.3 ± 1.9 to 12.1 ± 1.6 g/dL was observed in this drug. Other significant improvement in Haemoglobin concentration was observed in *Kasisa Bhasma* (1.88 g/dL) and *Dhatri Avaleha* (1.2 g/dL). Effect on other haematological and biochemical parameters, other parameters such as serum iron, serum ferritin, TIBC, MCH, MCHC, and MCV were assessed in 12 studies and nine of them have reported significant improvement in the haematological and biochemical parameters. Effect on subjective parameters Subjective parameters of Anaemia such as *Dourbalya* (weakness), *Aruchi* (anorexia), *Arohanayasa* (exertional dyspnoea), *Angamarda* (fatigue), *Hriddava* (palpitation), *Shiroruja* (headache), *Pandutva* of *netra* (pallor), *Rukshangata* (dryness), *Shotha* (oedema), and *Alasya* (lassitude) were assessed in eleven out of 15 studies included in the review. The objective parameters were also assessed in those studies. Of the eight studies, six reported significant improvement in both objective and subjective parameters, while five studies reported statistically significant improvement only in subjective parameters after the intervention.

A literature review conducted by Prajapati and Acharya found that there are around 176 Ayurvedic formulations with 37 different dosage forms are available for management of Anaemia (Pandu).[12] Around 17 Ayurvedic preparations with different dosage have been used in the studies included in the current review. The mode of action of Ayurvedic preparations and their components were mentioned in all the 15 studies. However, few studies which included iron-containing Ayurvedic preparations have not mentioned the iron content explicitly. Studies have mentioned that the vehicle which is administered along with the Ayurvedic preparation has substantial role on the effect of the drug. However, the effect of vehicle has not been explored in any of the studies. Samal J had conducted a similar review on Ayurvedic preparations on the management of Anaemia, included studies published till 2014.[32] The newer studies included in the current review has relatively shorter intervention period (30–90 days) and tried to compare the effectiveness of iron-containing and non-iron containing iron preparations with oral IFA tablets. Ayurvedic drugs were found to have similar effects as IFA tablets with less side effects. Ayurvedic preparations such as *Kasisa bhasma, Navayasa Curna, Punarnavadi Mandura, Dhatri Lauha, Pradarantaka, Lauha, Sarva-Juara-Hara Lauha, Vrihat Yakrdari Lauha, Sootshekhar Rasaootshekhar plus Sitopaladi Churna, Amaranthus viridis, BioIron, Vajravatakmandura, Trikatrayadi Lauha*, and *Amalaki Rasayana* reported significant improvement in haematological parameters compared to the baseline values or control group. The non-iron containing Ayurvedic preparation *Dhātrī avaleha*, also showed significant improvement in haematological parameters after the intervention. However, *Punarnava Mandura, Pandughnivati, and Dhatrilauhavati,* which are iron-containing Ayurvedic preparations have not shown significant improvement in haematological parameters.

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