INTRODUCTION

Vamana Karma is considered as the first, major & laborious Pradhana Karma procedure of Panchakarma therapy. Literally Vamana Karma means to induce therapeutic vomiting or to expel out the vitiated Doshas through oral route, which is indicated for the purification of Urdhwa Bhâga of the body. In the present era of Globalization, each & every aspect is accepted after fine scrutinization. Due to evolution of evidence based medicine, there is a growing demand for evidence or the proofs of the outcome from each treatment. This is also necessary for making uniform system of practice or standardised system at all the Panchakarma centres.

Basically researches in Panchakarma in India can be considered at 3 levels,
- PG and PhD institutes
- Government Research centres
- Private research centres

Till date, there are many Panchakarma related researches had been carried out in above mentioned centres and are been published as a research articles in various national and international research journals. To make it easily understandable and to shed light on major topics, an effort has been made to merge the research areas under the following fields
1. Standardization of Panchakarma procedures.
2. Standardization of new yoga’s for shodhana.
3. Standardization of dosage pattern for Panchakarma procedures.
4. Influence of Panchakarma on different biochemical parameters.

In the present study, the researchers conducted over Vamana Karma are discussed with respect to above mentioned fields of researches in Vamana Karma.
Methodology: Review was done on clinical studies carried out in above mentioned research centres, were reviewed and the results are discussed with respect to their research areas:
1) Total 50 patients & healthy volunteers who were fit for Vamana Karma were selected from O.P.D. & I.P.D. of Panchakarma Hospital of I.P.G.T. & R.A, Jamnagar. They were randomly divided into following 2 groups.

Study design:
Classical Group: Madanphala Pippali was taken in Antarnakha Musti Pramana by the patient’s own hand. It was then added in Yastimadhu Kwath & kept for one night (Previous night of Vamana Karma). In the morning time, it was stirred properly & filtered. Then it was given to the patient in lukewarm state mixing with honey & Saindhava Lavana up to Pittanta Vamana. Before administration of medicine at first in early morning, Ghritayukta Yavagu was given to the patient after Abhyanga & Swedan.

Traditional Group: In the morning, first after Abhyanga & Swedan, milk or Ikshu rasa was given to the patient as a Akanthapana (drinking up to brim of neck). Then Madanphala Pippali Churna, Saindhava Lavana & Vacha were taken in a ratio of 4 parts, 2 parts & 1 part respectively and made a paste with honey. It was then given to the patient directly or indirectly by mixing with any liquid media like Milk or Ikshu Rasa or Phanta. Afterwards Yastimadhu Phanta was given until there is PittantaVamana.

Results: A) Comparison of results between two groups:
1. It was observed that Vamana by classical method is clinically more effective by 17.11% than traditional methods in getting relief from signs & symptom of patients. It is statistically significant at the level of P<0.05
2. It was observed that 6.74% more Vegas were seen in classical method when compared to traditional method. But it was statistically insignificant at the level of P>0.10
3. Laingiki Shudhhi was observed more by 5.51% in Vamana by classical method compared to traditional method. But it was also statistically insignificant at the level of P>0.10
4. The value of Hexosamine (Mucopolysaccharide) was observed more by 28.22% in vomitus expelled by classical method, and it was statistically significant at the level of P ≤0.05
B) Standardized points of Vamana Karma in present study:
An average amount of 13.51gms was observed as the Pramana of Antarnaksamusti (Madanaphala Pippali Pramana) and 4 litres of Yastimadhu Kwatha was considered as standard quantity of Vamanopaga Dravya.
“pH” of the vomitus may guide the “end point” (Antiki Shuddhi) of procedure, i.e. Acidic pH was found in earlier stage {due to Gastric juices} and Alkaline pH was seen in last stage {due to Bile juices or Accha Pitta}
The above clinical study concluded that the method mentioned in classics is very much beneficial from every point of view in comparison to the method which has been used traditionally as it is very easy, safest, less time consuming. Classical method is clinically as well as statistically most effective method when compared to traditional method.
2) A single group clinical study, wherein 30 patients suffering from Ekakustha were selected from IPD of SDM College of Ayurveda & Hospital, Hassan. All sub-
jects were be administered Vamana with Kutaja Siddha Krushara.

**Study design:** In this study patients were first subjected to Deepana Pachana with Panchakola Churna 5 gms thrice daily before food, till Nirama Avasthawas achieved. Then the patients were administered with Shodhananga Snehapan with Moorchita Ghritha in Arohana Krama starting with Hriyasi Matra of 30 ml till Samyak Snigdha Lakshanas were observed or maximum of 7 days whichever was earlier. During Vishrama Kala Sarvanga Abhyanga was done with Moorchitataila and Ushnajala Snana was advised. On the day of Vamana, Sarvanga Abhyanga was done with Moorchita Taila and Ushna Jala Snana was done and thereafter Vamana was carried out by administering Kutaja Siddha Krushara as Vamaaka Yoga. After Vamana, Samsarjana Krama (Peyadi) was advised according to the level of Suddhi.

**Preparation of Kutaja Siddha Krushara:** The Krushara was prepared by taking Tandula (rice) 1 part, Mudga ¼ parts, Saindhava Lavana, Adraka, Hingu, Haridra in according to taste and cooked well by adding 6 parts of water. Kutaja Beeja Churna {12gms} mixed with honey and Saindhava was added to this Krushara. The Krushara was administered in Sukhoshna condition.

**Results on Vamana Karma:**
- During Vamana Karma, in 22 patients accounting for 73.33% had all the Langiki Lakshanas.
- In Antiki i.e. 73.33% had Kaphanta Shuddhi
- In Maniki Shuddhi 20 patients i.e. 66.66% patients had volume of vomitus between 301-600ml.
- In relation to Suddhi, 20 patients accounting for 66.66% had Madhyama suddhi.
- In 100% or all 30 patients no complication or Vyapad of Vamana was observed.

**Results on EkaKustha:**
- There was overall 41.48% relief in the parameter Matsyashakalopamam
- There was overall 73.44% relief in the parameter Kandu.
- Overall 86.96% relief in the parameter Candle grease sign.
- Overall 29.01% relief in the parameter of PASI score was observed.
- There was no change in the parameters like Aswedanam, Mahavastu and Auspitz sign.

Thus the above study concluded that, Kutaja Siddha Krushara was able to induce Madhyama Shuddhi without any Vyapads (complications). Vamana Karma with Kutaja Siddha Krushara showed significant changes in the parameters of Ekakushta (Psoriasis) like Matsyashakalopamam, Kandu, Candlegreese sign, PASI score (p<0.001).

3) A randomized interventional clinical study was conducted comprising of 30 subjects fulfilling the diagnostic criteria of Vicharchika were selected from IPD of SDM college of Ayurveda & Hospital, Hassan and were randomly categorized into two groups.

**Bhavita Madanaphala Pippali Choorna Prperation:**
By giving Samskara the quality of the drug will be enhance. Bhavana is a type of Samskara, by which Veerya of the drug will increase and the dose can be decrease. Bhavana can be done by the Kashaya, Swarasa or any Dravadravya. The Dravadravya should be prepared out of the Dravya which is equal quantity to...
By keeping this reference Bhavita Madanaphala Pippali Choorna was prepared.

- Above said Samskarita Madanaphala Pippali Choorna was taken for Bhavya Drava to this Bhavana was done by Samskarita Madanaphala Pippali Siddha Kashya.
- Kashaya was prepared out of Samskarita Madana Pippali Yavakuta Churna (which was equal to that of Bhavana Dravya) and Jala in the ratio of 1:8 respectively. Then It was reduced to one fourth and used for Bhavana.
- 3 times Bhavana was given and dried.

**Method:** Samsarita Madanaphala Pippali Choorna was taken and putted in a grinder machine and Bhavana Dravya i.e. Madanaphala Kashaya was poured into it then trituration was done continuously until it attain solid consistency. This was considered one Bhavana. Like in the same way totally three time Bhavana was given in three days. At last dried under the shade and stored in air tight container.

**Study design:** The first Group (MPC) consisting of 15 subjects where Madanaphala Pippali Churna in the dose of 12gram was administered as Vamaka Yoga and the second Group (BMPC) consisting of 15 subjects where Bhavita Madanapippali Churna in the dose of 4 grams was administered as Vamaka Yoga.

**Results on Vicharchika:**
- Both the groups proved statistically significant (p<0.001) relief in all the symptoms of Vicharchika like Kandu, Srava, Pidaka, Varna, Vedana after Vamana Karma and even at the end of Samsarjana Karma when compared to the symptoms before treatment.
- Mann-Whitney Test was applied to see the difference between the Groups, it was found statistically that there was no much difference of changes seen in between the group, i.e. Bhavita Madanaphala Pippali has shown same effect on Vicharchika as well as Madanapippali Churna even in smaller dose.

**Observation during Vamana Karma:**
- **Self-start of Vamana:** Among whole data, Swayam Pravruti of Vamana was observed in 14 of the subjects in each MPC and BMPC Group. And for remaining one subject in each group was induced by finger.
- **Time taken to start Vamana Vega:** During Vamana Karma, average time taken to start first Vamana Vega in MPC Group was 22 min. whereas in BMPC Group it was 25 min. And statistically there was no Significant Changes between the groups.
- **Pittanta Shudhi:** During Vamana Karma, in only 5 subjects achieved Pittanta Shudhi in MPC group whereas 9 subjects achieved Pittant Shudhi in BMPC group. Even in BMPC group shown more Pittanta, Statistically by considering 15 subjects in each group, both the groups were not able to achieve Pittanta.
- **Vaigiki Shudhi:** In this study, 7-8 Vagas seen in majority of subjects that was 8 in MPC whereas 10 in BMPC group and 5-6 Vaga seen in 7 subjects in MPC and 5 in BMPC. There was no significant level of changes was seen between the groups.
- **DRUG PALATALABILITY:** In this clinical study it was found that the palatability of the drug was more in trial group i.e. BMPC group than control group i.e. MPC group.

**Results on Vamana Karma:** In this study trial group Bhavita Madanaphala Pippali Choorna as a Vamaka Yoga in the dose of 4gram showed statistically significant result in all the parameters to attain Samyak Vamana Karma like Pittantashudhi,
Laingiki Shudhi, Maniki Shudhi, Vegiki Shudhi, commencement of Vega, and without causing any complication. And even in yielding better relief in the symptoms of Vicharchika when compared with the control group where regular Madanaphala Pippali Churna were used as Vamaka Yoga in the dose of 12grams.

**Conclusion:** Bhavita Madanaphala Pippali Churna in the quantity of 4 gm was Statistically significant in achieving Samyak Vamana Karma Lakshanas and relieving the symptoms of Vicharchika as Same as regular Madanaphala Pippali Churna in the quantity of 12gm. So it can be recommended to use Bhavita Madanaphala Pippali Churna in less dose (4gm) as a Vamaka Yoga to conduct Samyak Vamana Karma instead of using Madanaphala Pippali Churna in the dose of 12 grams.

4) A single blind clinical study of 23 volunteers who are ‘Swastha’ and who are fulfilling the criteria for undergoing the process of Vamana were selected from SDMCA, Udupi.

**Study Design:** Subjects who are fit for Vamana Karma were given Triphala Churna 10 gms with hot water for Kostha Pariksha. Pachana-deepana with Shunti Choorna 5gms thrice day for 3 days was given. For Abhyantara Snehapana Sarpi was selected and administered until the Samyak Snigdha lakshanans were observed. This was followed by one day rest, during which Sarvanga Abhyanga and Bhaspha Sweda was administered and Kaphaut Kleshakara Ahara in the form of curds, sweets was advised. On second day subjects were given Sarvanga Abhyanga and Bhaspha Sweda followed by Vamana Karma with Madanaphala Yoga. Dhumapana and Samsaranakrama is advised according to Shuddhi. Electrolytes and pH analysis by blood gas analysis; the assessment of serum electrolyte was carried at three intervals. First analysis was done before administering Vamana and second analysis after completion of Vamana. The third analysis was done just before Peya Paana.

**Results:** The serum electrolyte levels in comparison to pre Vamana and post Vamana status revealed that serum sodium concentration is increased by 1.97% and the same is decreased by 3.08% before Peyapaana. Levels of serum Potassium Concentration after Vamana was raised by 2.63% & the same before Peyapaana was reduced by 5.4%. Levels of serum chloride also increased by 3.36% after Vamana and it is reduced by 6.92% before Peyapaana. The pH after Vamana was increased by 2.18% & it is reduced to 2.40 % before Peyapaana.

The blood pH is tending towards alkalosis because of loss of H+ions during Vamana Karma but within some time pH gained back its normalcy.

**Conclusion:** In Vamana Karma, changes observed in serum electrolyte levels were very minimal and was under physiological range. The symptoms of Hritadosha are simulating with mild symptoms of Rasa Dhatukshaya in the body. After Vamana Karma, blood pH is tending towards alkalosis, due to loss of H+ ions from the body during Vamana.

5) A clinical study including of 30 subjects who fulfilled the criteria for undergoing the process of Vamana were selected from SDMCA, Udupi and were randomly categorized & analyzed under 2 Groups of 15 subjects each irrespective age, cast, creed, etc.

**Study design:** In this study 30 healthy subjects were administered with Triphala Kahsaya in a dose of 150 ml at 9.30 am for the assessment of the Koshta. Then after assessing the Koshta Dipana, Pachana Chikitsa was carried out with Vadavanala.
for a period of 3 days. Then the subjects were administered with Shodhananga Snehapana with Moorchita Ghritha in Arohana Krama starting with Hriyasi Matra 25 ml till Samyak Snigdha Lakshanas were observed or maximum of 7 days whichever was earlier. Once the Samyak Snigdha Lakshanas were observed then Snehapana was stopped & subject was shifted to Bahya Snehana Swedana in the form of Abhyanga Bashpa Sweda for one day & was administered with Kaphotkleshakara Ahara on that day. Next day subjects were again subjected for Abhyanga & Bashpasweda in the early morning (6.30-7.00 depending on the sun rise) followed by Vamana Karma with Unprocessed or Processed Madanaphala Pippali Churna. Samsarjana Krama was advised according to Shuddhi.

For Group MPU: 3-6 gms of unprocessed Madanaphala Pippali Churna was mixed to 1 glass of (350 ml) Yastimadhuphanta & to the same Saindhava Lavana & Purnamadhu was mixed.

For Group MPP: 8-12 gms of classically processed & preserved Madanaphala Pippali Churna was added to 1 glass of (350 ml) Yastimadhu phanta on the previous night of Vamana.

Results: ‘Antarnakha Mushti Pramana’ of Madanaphala mentioned by Charaka refers to Shodhita Madanaphala. There was a change in color & consistency in Madanaphala during the each phase of Bhavana with Ghrita, Dadhi, Madhu, & Tilakalka, finally it attained dark brown & semisolid in consistency.

Classically processed Madanaphala in the dose of 8-12 gms induces Pittantavamana in a very short duration of time with all other Samyak Yoga features & very less chances of Pratiloma Pravruti.

There was no significant change in serum electrolytes level before & after Vamana as well as in between the groups. There was a significant reduction in Saphone content in Shodhita Madanaphala. Endoscopy after Vamana showed mild inflammatory changes. Complete evacuation of bile from gallbladder was noted in USG after Vamana.

DISCUSSION

The clinical trial conducted by Dr Ranjip Kumar Dass et.al concluded that the method mentioned in classics is very much beneficial from every point of view in comparison to the method which has been used traditionally as it is very easy, safest, less time consuming and clinically as well as statistically most effective method.

The clinical study conducted by Dr.Nirupam B et.al concluded that the Kutaja Siddha Krushara was able to induce Madhyama Shuddhi without any Vyapads (complications), Vamana Karma with Kutaja Siddha Krushara showed significant result in the parameters of EkaKustha (Psoriasis) like Matsuysashkalopamam, Kandu, Candlegreese sign, PASI score (p<0.001).

The clinical trial conducted by Dr.Ramanuj I et.al concluded that the Bhavita Madanaphala Pippali Churna in the quantity of 4 gm was Statistically significant in achieving Samyak Vamana Karma Lakshanas and relieving the symptoms of Vicharchika as same as regular Madanaphala Pippali Churna in the quantity of 12gm. So it can be recommended to use Bhavita Madanaphala Pippali Churna in fewer doses (4gm) as a Vamaka Yoga to conduct Samyak Vamana Karma in spite of using Madanaphala Pippali Churna in the dose of 12gram in Vicharchika. The clinical study carried out by Dr.Sachitha B Shetty et.al concluded that In Vamana Karma
changes observed in serum electrolyte levels were very minimal and was under physiological range. The symptoms of Hritadosha are simulating with mild symptoms of Rasa Dhatu Kshaya in the body. After Vamana Karma, blood pH is tending towards alkalosis, due to loss of H+ ions from the body during Vamana.

The clinical study conducted by Dr.Prandev U et.al summarized that Antarnakha Mushti Pramana of Madanaphala mentioned by Charaka refers to Shodhita Madanaphala. Classically processed Madanaphala in the dose of 8-12 gms induces Pittantavama in a very short duration of time with all other Samyak Yoga features & very less chances of Adho-Pravrutti. There was no significant change in serum electrolytes level before & after Vamana as well as in between the groups. Endoscopy after Vamana showed mild inflammatory changes. Complete evacuation of bile from gallbladder was noted in USG after Vamana.

CONCLUSION

Time to time research updates in every field of medical sciences must be done, so as to establish Ayurveda (Pan-chakarma) as a evidence based medicine in all its aspects. The above five researches are evidences of standardization of Vamana Karma with respect to procedure, new Yoga for Vamana Karma and its dosage pattern, influence of Vamana Karma on electrolytes and lastly effect of Shodhana of drug prior to Vamana Karma. This is an eye-opener for beginners to practice Vamana Karma effectively.

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