



Research Article

www.ijrap.net



EFFECTIVENESS OF LOHARASAAYANA AFTER LEKHANA VASTI IN CENTRAL OBESITY: A CASE STUDY

Mrudula J^{1*}, Miharjan K², Parvathy S.P³, Arun Pratap⁴, Lekshmi R⁵

¹PG Scholar, Dept. of Kayachikitsa, Pankajakasthuri Ayurveda Medical College & Post Graduate Centre, Thiruvananthapuram, India

²Professor and Head of the Department, Dept. of Kayachikitsa, Pankajakasthuri Ayurveda Medical College & Post Graduate Centre, Thiruvananthapuram, India

³Associate Professor, Dept. of Panchakarma, Pankajakasthuri Ayurveda Medical College & Post Graduate Centre, Thiruvananthapuram, India

⁴Associate Professor, Dept. of Kayachikitsa, Pankajakasthuri Ayurveda Medical College & Post Graduate Centre, Thiruvananthapuram, India

⁵Assistant Professor, Dept. of Kayachikitsa, Pankajakasthuri Ayurveda Medical College & Post Graduate Centre, Thiruvananthapuram, India

Received on: 08/04/18 Accepted on: 11/05/18

*Corresponding author

E-mail: mrudu007@gmail.com

DOI: 10.7897/2277-4343.09362

ABSTRACT

Obesity is defined as a body fat content of more than 20% in average adult males and over 30% in females. Central obesity in which fat accumulates in the trunk and abdominal cavity is associated with much higher risk for several diseases such as metabolic syndrome and carcinomas etc. Obesity can be compared to Sthoulya in Ayurveda. The aim of the study is to evaluate the effectiveness of Loharasaayana after Lekhana Vasti (decoction Enema) in Central Obesity. A 50 years old male patient visited to Kayachikitsa OPD, Pankajakasthuri Ayurveda Medical College & Hospital Kattakada, Thiruvananthapuram on 11/08/2017 with well demarcated weight gain, increased abdominal size, heaviness of abdomen and breathing difficulty since 2 years. His untimely food habit, night awakening and increased day sleep (nature of job) lead to this condition. Treatment was given as Lekhana Vasti in Yoga Vasti pattern followed by intake of Loharasaayana for a period of 45 days. After the whole course of treatment, marked reduction in subjective and objective parameters were observed. This effective treatment protocol can prove as a noninvasive safe therapy for the management of Central obesity.

Keywords: Central Obesity, Sthoulya, Lekhana Vasti, Loharasaayana.

INTRODUCTION

Obesity is defined as a body fat content of more than 20% in average adult males and over 30% in females¹. Central Obesity or Visceral Obesity in which fat accumulates in the trunk and in the abdominal cavity (in the mesentery and around viscera), is associated with a much higher risk for several diseases than it's excess accumulation of fat diffusely in subcutaneous tissue. An ICMR published study in 2015 reveals that, where prevalence of generalized Obesity found in Northern India was 50.1% and in Tamil Nadu was 45.9% while in Abdominal obesity was 68.9% and 46.6% respectively. Overall four region (India) studies showed that prevalence of abdominal obesity was higher than generalized obesity. This prevalence could be attributed to the increasing urbanization, use of mechanized transport, increasing availability of processed and fast foods etc.². Subjects with abdominal obesity are at a greater risk for developing Type 2 Diabetes mellitus, Hypertension, Cardiovascular disease, Metabolic Syndrome and Carcinomas³. Modern system provides solutions like Nutritional counseling, weight reduction program, behavioral therapy, Bariatric surgery and Pharmacotherapy⁴. In Ayurveda Sthoulya (obesity) is considered as one of Santarpanotha vikaaraas (diseases caused by taking of excessive nourishing diet). According to Bhavaprakasha, those who resort to improper lifestyle practices Medas (fat) gets deposited in abdomen⁵. Charakacharya in Sutrasthana states, Athisthoola (too

corpulent) person with excessive accumulation of Medas and Mamsa (muscle) leading to flabbiness of hips, abdomen and breast and has been categorized as one of the Ashta Ninditheeya Purusha (8 types of undesirable constitutions) and is at risk of developing various complications⁶. Vata Kaphamedohara Oushadha along with Rooksha (dry) Ushna (hot) Teekshna (sharp) Vasti is the treatment principle⁷ mentioned. So in this context Vasti (enema) especially Lekhana Vasti mentioned by Acharya Sushruta⁸, as a Shodhana (purificatory) measure for removing Margavarodha (Stagnation of passages) and thus helps in Anulomagathi of Vata which immensely cause Vighatana of Sthoulya samprapthi⁹ (Pathogenesis). Loharasaayana is best to mitigate Vata, Kapha (bodily humors) and Medas(fat) and is effective in making a stout person lean and helps in greatly reducing the big size of abdomen. This also acts as a Rasaayana (rejuvenation) which helps in Dhatu samatva (equilibrium state of body constituents).

MATERIALS AND METHODS

Case study

A 50-year-old male patient, security officer by occupation, reported to Kayachikitsa OPD, Pankajakasthuri Ayurveda Medical College & Hospital Kattakada, Thiruvananthapuram on 11/08/2017 with well demarcated weight gain, increased

abdominal size, heaviness of abdomen and breathing difficulty while speed walking and even during talking since 2 years. On examination, his BMI was 36kg/m². His Waist circumference was 113cm, Hip circumference was 108cm and waist Hip ratio was 1.04. On GIT examination, striae and borborygmi detected, other systemic examinations and Laboratory investigations such as FBS, LIPID PROFILE, LFT, RFT.ROUTINE TEST was found to be normal. Subjective and objective parameters were assessed.

Treatment

The patient was administered Lekhana Vasti in yoga Vasti pattern followed by Loharasaayana. The details of the procedures are described in Table 3.

Yoga Vasti¹⁸

Anuvasana Vasti (Oil enema)- carried out with Moorchita Tila taila- 150 ml (5 Anuvasana vasti given)

Niruha Vasti (Decoction enema)- Vitals were recorded prior to procedure, after that patient made to lie comfortably on his left lateral side and Vasti administered; Samyak Lakshana was observed. Later patient was advised hot water bath and light diet.¹⁹⁻²² (3 Niruha Vasti given)

After completion of Lekhana Vasti i.e. from 9th day onwards Loharasaayana was given followed by milk as Anupana (Adjuvant) for 45 days and allowed to continue usual Diet and Exercise.

Special note: Loharasaayana prepared under consideration of AFI²⁸ and Lohabhasma (Calcinated iron) added in that on the basis of AFI view regarding dosage²⁹ (200 mg/day).

Ethical clearance Number-The study has been cleared by the IEC vide approval reference no- PKAMC|PG001|EC|2015-2016.The study is carried out as per International conference of Harmonization-Good Clinical Practices Guidelines (ICH-GCP).

Table 1: Objective Assessment¹⁰

Objective	Assessment
Body mass index	Body mass index BMI > 30 Kg/ m ² and < 40 Kg/ m ²
Waist circumference	Waist circumference > 35.5 inches (90cm) and <45 inches (114cm) for male and > 31.5 inches (80cm) and <40 inches (102cm) for female
Waist Hip ratio	Waist hip ratio >0.90 for males and >0.85 for females

Table 2: Subjective Assessment¹¹

Subjective	Features	Score (Grade)
Angachalatva (Body movement)	Absence of Chalatra-0	0
	Little visible movement after fast movement	1
	Little visible movement even after moderate movement	2
	Movement after mild movement	3
	Movement even after changing posture	4
Kshudra Shwasa (Dyspnoea)	No Dyspnoea	0
	Dyspnoea after heavy works but relieved soon and up to tolerance	1
	Dyspnoea after moderate works but relieved later and up to tolerance	2
	Dyspnoea after little works but relieved later and beyond tolerance	3
	Dyspnoea in resting condition	4
Gatrasada (Fatigue)	No fatigue-0	0
	Little fatigue in doing hard work	1
	Moderate fatigue in doing routine work	2
	Excessive fatigue in doing routine work	3
	Excessive fatigue even in doing little work	4
Atikshudha (Excessive desire for food)	Person not at all taking food	0
	Person taking food in less quantity once a day	1
	Person taking food in less quantity twice in a day	2
	Person taking food in moderate quantity twice in a day	3
	Person taking food in excessive quantity thrice in a day	4

Table 3: Lekhana Vasti

S.N.	Ingredients of Lekhana Vasti	Quantity
1	Moorchita Tila Tailam ¹² (Processed Gingelly oil)	200 ml
2	Makshikam (Honey)	200 ml
3	Saindhava Lavana (Rock salt)	15 gm
4	Yavaanyaadikalka ¹³ (Paste of Yavanyadi drugs)	30 gm
5	Thriphala Kashayam ¹⁴ (Decoction of Haritaki, Vibheetaki & Amalaki)	300 ml
6	Dhanyamlam ¹⁵ (Fermented cereal)	200 ml
7	Yavaksharam ¹⁶ (Alkaline preparation of <i>Hordeum Vulgare Linn</i>)	10 gm
	Total	950 ml ¹⁷

Table 4: Loharasayana²³

Serial No	Ingredients	Botanical Name
1	Shodhita Guggulu ²⁴	<i>Commiphora mukul</i>
2	Talamuli	<i>Curculigo orchoides gaertn</i>
3	Triphala	<i>Terminalia chebula, Terminalia bellirica, Emblica officinalis</i>
4	Khadira	<i>Acacia catechu</i>
5	Vrusha	<i>Adhatoda vasica</i>
6	Trivrut	<i>Operculina terpepethum</i>
7	Alambusha	<i>Biophytum sensitivum</i>
8	Shunti	<i>Zingiber officinale</i>
9	Nirgundi	<i>Vitex negundo</i>
10	Shodhita Chitraka ^{25,26}	<i>Plumbago zeylanica Linn.</i>
11	Lohabhasma	Calcinated iron
12	Purana Ghrita	Clarified old ghee
13	Sarkara	Jaggery
14	Madhu	Honey
15	Shodhita Shilajathu	<i>Black Bitumen</i>
16	Ela	<i>Elettaria cardamomum maton</i>
17	Twak	<i>Cinnamomum verum persl</i>
18	Vidanga	<i>Embelia ribes burm</i>
19	Maricha	<i>Piper nigrum Linn.</i>
20	Anjana (Daruharidra taken) ²⁷	<i>Berberis aristata</i>
21	Krishna	<i>Piper longum</i>
22	Shodhita Kaaseesa	Ferrous Sulphate

Table 5: Dose and time of intake of medicine

Medicine	Quantity	Time	Anupana
Loharasaayana	5 gm	8am and 8 pm	Milk (25 ml)

RESULT

Table 6: Objective assessment

Objective	Before treatment	After treatment
Body mass index	36.2 kg/m ²	35.07 kg/m ²
Waist circumference	113 cm	97 cm
Hip circumference	108 cm	96 cm
Waist Hip ratio	1.04	1.01

Table 7: Subjective assessment

Subjective	Score – Before Treatment	Score – After Treatment
Angachalatva	4	1
Kshudra Shwasa	3	1
Gatrasada	4	1
Atikshudha	4	3

DISCUSSION

Central Obesity is a fast growing problem in developing countries as a result of changes in life style, genetic factors etc. It is an extremely important condition as may lead to cardiovascular diseases, Diabetes Mellitus, Dyslipidemia and further leads to death.

This study is meant to evaluate the combined effect of Lekhana Vasti and Loharasaayana in Central obesity. The study emphasizes the effectiveness by evaluating the changes in subjective and objective criteria.

a) Interpretation of Data Related to Demography

Age: patient belonged to the age of 50 years.

Domicile: Patient was in U.A.E after came back to Kerala he developed these conditions. This may be because of change in lifestyle due to urbanization.

Nature of work: He works as a security officer now. His job demands long time standing, sitting, night work, untimely diet,

day sleep, easy fatigues, knee joint pain and decreased physical activity. This shows positive relation between Central obesity and sedentary lifestyle.

b) Interpretation of data related to Dietary habits

Diet & Predominant Rasa in food - Patient is a Non – vegetarian, prefers fried items, Fond of sweet, sour, salty and pungent foods. Excess intake of these Rasa in food is a Nidana for Kapha Vridhi.

Appetite: Patient had increased appetite, irregular food pattern like using excess quantity of food at improper timings

Agni: patient had Teekshnagni (increased digestive fire).

c) Interpretation of Data Related to general condition

Sleep: Patient having increased day sleep and reduced night sleep.

Exercise: Nil. Decreased physical activity increases the incidence of Central obesity.

III healthy habits: Alcohol consumption but stopped before 1 year.

Prakriti(Constitution): Patient having Pitta Kapha Prakriti.

d) Interpretation of Data Related to Response to treatment

There was significant reduction found in Subjective and Objective criteria of Central Obesity during the study period. After 1 month of study period also found significant reduction.

No side effect was reported even after the study period also. In a nutshell, drugs showed significant changes in Central Obesity.

Probable mode of action

In Lekhana Vasti, Vasti Veerya (potency) gets absorbed from the colon and reaches at the cellular level. After reaching at cellular level, performs the action of Samprapti Vighatana (breaking of pathogenesis). The drugs of Lekhana Vasti and Loharasaayana have dominance of Katu (pungent)-Tikta (bitter) Kashaya (astringent) Rasa (taste), Laghu (light)-Teekshna (sharp)-Sukshma (subtle) Guna (properties), Ushna (hot) Veerya (potency) and Katu Vipaka (state of food/drug after digestion). All these properties normalize Guru (heavy), Snigdha (unctuous), Seeta (cool), Pichila (slimy) Guna Pradhana Kapha, Ama (undigested food) and Meda. Katu, Tikta, Kashaya Rasa reduces Kleda (moistness) hence they cause depletion of the Meda Dhatu (adipose tissue). It also reduces Kapha-Meda-Sweda (sweat) Dushti (vitiation) and thus helps in Lekhana Karma (scrapping therapy). Laghu Guna is a Vayu, Agni and Akasha Mahabhuta Pradhana. Reduction of over nourished Meda Dhatu is the main aim of Lekhana Karma which helps in Sthoulya. Among drugs, Guggulu is considered as Agryaoushadha (most wholesome drug) for Meda and Vata (one of the body humors). Vata Kapha Medohara properties of Guggulu indisputably corrects the Samprapti and it has specific action on lipid metabolism. Lohabhasma is considered as a Shreshta Rasaayana (best rejuvenative) in Sthoulya and has a good Lekhana property. Rasayana Guna (rejuvenative property) helps in Dhatu Poshana (nourishment of tissues) and Sthiratwa (stability), thus preventing the instinct for secondary diseases also. Thus the total effect of Loharasaayana after Lekhana Vasti are Thridoshahara (alleviation of aggravated bodily humours) especially Kapha Vatahara, Rasaayana, Medohara, Deepana (Appetizer), Amapachana (digestive), Rechaka (cathartics) and Lekhana in action. In this way drugs reduces Kapha-Vata Dushti, increases Agni (digestive fire), digests the Ama, correct the Medodhatvagni Mandya, remove obstruction in Medovahasrotas (channels of adipose tissue).

The formulation includes drugs for which modern researches have proved hypolipidemic, hypoglycemic, hepatoprotective, anti-inflammatory, carminative, antioxidant and both immuno and cardiac stimulant in action.

With the help of all, patient got reduction in big size of abdomen as due to the depletion of deposition of Medas in Udara Pradeshha (abdominal region). Also, no side effects were noted during the study period and follow up period. The study drug was reported to be palatable by the patients. Therefore, Loharasaayana after Lekhana Vasti (Decotion Enema) can be used safely as a treatment of choice in Central Obesity.

CONCLUSION

Sthoulya is a disease which is a Santarpanotha janya vyadhi (diseases caused by taking excessively nourishing diet) can be easily tackled with proper assessment and Panchakarma (5 types

of purificatory therapies) treatment plan along with appropriate Shamana Oushadhi (palliative medicines). It is caused by excessive indulgence in oily and fatty food and sedentary life style. The treatment of Panchakarma like Lekhana Vasti followed with Loharasaayana is best way to manage such condition along with Nidana Parivarjana (avoidance of causative factors). In above case this treatment resulted marked reduction in all the criteria's of Sthoulya (Obesity). So, it can be concluded that, Ayurvedic line of management gives satisfactory answer as well equally beneficial for the promotion and preservation of health in a centrally obese person by removing toxic wastes, by balancing morbid humors and by correction of Agni (digestive fire) which results in marked relief for a Patient of Sthoulya leading to the healthy life.

ACKNOWLEDGEMENT

The authors sincerely acknowledge Padmasree Dr. J. Hareendran Nair, Chief Physician, Kayachikitsa Unit-1, Pankajakasthuri Ayurveda Medical College Hospital, Kattakkada, Thiruvananthapuram. for his valuable guidance regarding this clinical study.

REFERENCES

1. Kopelman PG, Caterson ID, Dietz WH. Clinical Obesity in Adults and Children. 2nd Ed. New Delhi: Blackwell Publishing; 2006.p.1-14.
2. Rajendra pradeepa, Ranjith Mohan, Anjana Shashank R joshi, Prevalence of generalized & abdominal obesity in urban & rural India- the ICMR - INDIAB Study (Phase-I) [ICMR - INDIAB-3], Indian J Med Res. 2015 Aug; 142(2): 139-150. PMID: PMC4613435 doi: 10.4103/0971-5916.164234.
3. Robbins and Cortan. Environmental and Nutritional Diseases chapt 9 In: Dr. Kumar, Dr, Abbas, Dr. Aster, editor. 9 th ed. South Asia: Reed Elsevier India private ltd; 2015. P.444-47.
4. Leigh Mckinney. Diagnosis and management of Obesity. AAFP [Internet]; 11400 Tomawk Greek parkway Lea wood ,KS66211. 2013. available from www.aafp.org .
5. Acharya Bhavamishra. Sthoulyadhikara 39/4. in: Srikantha Murthy, editor. Bhavaprakasha Nighandu vol-2 (Madhya and Uttarakhanda) elaborated by Bhavamishra. 2nd ed. Varanasi: Chowkamba press; 2002.p.502
6. Agnivesha. Ashtauninditeeya Adhyaya, 21/9. In: Vaidya Acharya Yadvaji Trivikramji, editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta. 2nd ed. Varanasi: Chowkambha Publications; 2014.p.117
7. Agnivesha. Ashtauninditeeya Adhyaya, 21/21. In: Vaidya Acharya Yadvaji Trivikramji, editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta. 2nd ed. Varanasi: Chowkambha Publications; 2014.p.117
8. Acharya Susrutha. Niruhakrama Chikitsitam, 38/82. In: Vaidya Acharya Yadvaji Trivikramji, editor Sushrutha samhitha with Nibandha samgraha commentary by Dalhana. 2nd ed. Varanasi: Chowkambha Publications; 2014.p.54
9. Agnivesha. Ashtauninditeeya Adhyaya, 21/5-9. In: Vaidya Acharya Yadvaji Trivikramji, editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta. 2nd ed. Varanasi: Chowkambha Publications; 2014.p.116
10. World Health Organization. Waist circumference and waist-hip ratio: report of a WHO expert consultation, Geneva, 8-11. December 2008 ISBN 978 92 4 150149 1 (NLM classification: QU

11. Meera Antiwal, Jai Prakash Singh, Shri Kant Tiwari. Clinical evaluation of Lekhaniya Kashaya Vasthi in the management of Sthoulya (Obesity) Ayu2014 [internet]. 2014Jan -March [cited 2014 Jan - March]. doi:10.4103/09748520.141907.
12. Yogaratnakara. Snehapaka prakarana 4 th sloka. In:Dr.Madham shetty suresh babu, editor .1st ed. Varanasi:chowkamba press;2008.p.152.
13. Acharya Vagbhata. Vasthikalpam 4/1-2 In: pt.shastri sadasiva hari, editor. Ashtanga Hridayam commentaries of Sarvangasundara of Arunadatta and Ayurvedarasayana of Hemadri.9th ed. Varanasi: Chowkambha publications; 2005,p-754
14. Acharya Sarngadhara. Kwatha kalpana Adhyaya.2/115-117.In:Srikantha Murthy,editor. Sarngadhar-Samhita elaborated by Sarngadhara .6th ed. Varanasi: Chaukambha press;2006, p-70.
15. KVKrishnan Vaidyan,S.Gopalpillai,editor.dhanyamlam.In:Chikitsasaras arvaswam(sahasrayogam)sujanapriyacommmentary.26thed,Al appuzha:Vidyarambham publishers; 2006.p.122.
16. Acharya Susrutha. Gulma pratishedham 42/40. In: Vaidya Acharya Yadvaji Trivikramji, editor Sushrutha samhitha with Nibandha samgraha commentary by Dalhana.2nded.Varanasi: Chowkambha Publications;2014.p.720
17. Acharya Sarngadhara. vasti kalpana Adhyaya.6/3. In:Srikantha Murthy, editor, Sarngadhar-Samhita elaborated by sarngdhara.6th ed.Varanasi: Chaukambha press;2006.p.215.
18. Agnivesha. Kalpanasiddhi 1/48.In:Vaidya Acharya Yadvaji Trivikramji,editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta.2nd ed. Varanasi: Chowkambha Publications;2014.p.684
19. Agnivesha. Panchakarmeeyasiddhi 2/14. In:Vaidya Acharya Yadvaji Trivikramji, editor Charaka samhitha elaborated by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta.2nd ed. Varanasi: Chowkambha Publications;2014.p.688-89
20. Acharya Susrutha. Netravasthipramana pravibhaga Chikitsitham, 35/21. In: Vaidya Acharya Yadvaji Trivikramji, editor Sushrutha samhitha with Nibandha samgraha commentary by Dalhana.2nd ed.Varanasi: Chowkambha Publications;2014.p.527
21. Acharya Vagbhata. Vasthividhi Adhyaya 19/4.In: pt.shastri sadasiva hari, editor. Ashtanga Hridayam commentaries of Sarvangasundara of Arunadatta and Ayurvedarasayana of Hemadri.9th ed. Varanasi: Chowkambha publications; 2005,p-271
22. Acharya Sree Chakrapanidatta. Anuvaasanadhikara 72/24. In:Indradev Tripathi editor. Chakradatta elaborated by sree chakrapanidatta.2nd ed. Varanasi: Choukambha publications; 2010.p.621
23. Acharya Bhavamishra. Sthoulyadhikara 39/32-43.in: Srikantha Murthy,editor. Bhavaprakasha Nighandu vol-2 (Madhya and Uttarakhanda) elaborated by Bhavamishra.2 nd ed.Varanasi: Krishna Das academy; 2002.p.506-07
24. S.Sharma Ras Tarngini 24/579- 580. In; Haridatta shastri,editor.2nd ed. Delhi: Motilal Banarasidas Prakashana;1986.p.75
25. S.Sharma Ras Tarngini 24/575.in: Haridatta shastri, editor. 2nd ed. Delhi: Motilal Banarasidas Prakashana;1986.p.754
26. Dr. Neelam Arya, Dr. Anita Sharma. The therapeutic and toxicological effect of Chitrak (Plumbago zeylanica L)-Arevie Ayush Dhara 2015 2[4]:259-264 [Internet]. 2015 Sept [Cited 2015 sept 10]. ISSN:2393-9583[P]/2393-9591(0).
27. Acharya Bhavamishra. Misraprakarana 6//245. in: Srikantha Murthy, editor. Bhavaprakasha Nighandu vol-1 (Purva khanda) elaborated by Bhavamishra.2nd ed. Varanasi: Chowkamba press; 2002.p.142
28. Govt of India Dept of ISM & Homeopathy. Avaleha or Leha and paka. The Ayurvedic formulary of India part 1 detailing about Formulartary compound formulation. 2nded. New Delhi:The controller of publications;2003.p.31
29. Govt of India Dept of ISM& Homeopathy. Lohabhasma (18:14). Rasatarangini, Taranga20,11-12. The Ayurvedic formulary of India part 1 detailing about Formulary compound formulation.2nded.NewDelhi:The controller of publications;2003.p.241

Cite this article as:

Mrudula J et al. Effectiveness of loharasaayana after lekhan vasti in central obesity: A case study. Int. J. Res. Ayurveda Pharm. 2018;9(3):53-57 <http://dx.doi.org/10.7897/2277-4343.09362>

Source of support: Nil, Conflict of interest: None Declared

Disclaimer: IJRAP is solely owned by Moksha Publishing House - A non-profit publishing house, dedicated to publish quality research, while every effort has been taken to verify the accuracy of the content published in our Journal. IJRAP cannot accept any responsibility or liability for the site content and articles published. The views expressed in articles by our contributing authors are not necessarily those of IJRAP editor or editorial board members.