ISSN 2456-3110
Vol 2 · Issue 1
Jan-Feb 2017

Journal of Ayurveda and Integrated Medical Sciences

www.jaims.in

JAIMS

Charaka Publications

Indexed

ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

Integration of Ayurvedic Medicine in Public Health Delivery System at primary level for UHC - An Evidence Based Study

Rayeesa Zainab,[1] Karthika P,[2] Irfanahemad AS,[3] Gulappa MD.[4]

[1]II[nd] Year Student, [2,3,4]II[nd] Year Students, MPH (Hons), Rajiv Gandhi Institute of Public Health and Centre for Disease Control, Jayanagar, Bangalore, Karnataka, India.

ABSTRACT

Background: In developing country like India it is very difficult for people of low socio-economic status to get access to healthcare and in case they seek healthcare, cost of medicines becomes major reason for out of pocket expenditure, as all the medicines are not available in PHC. **Objective:** To collate Ayurvedic medicine with Allopathic medicine to provide choice of treatment to patient in view of UHC. **Methods:** A literature review on Ayurvedic drugs (single drug and formulations) was done after prioritizing the diseases for our study based on National programs and other frequently seen diseases in Primary healthcare (PHC). Evidence was collected in two ways, first by pure Ayurvedic evidence based on Samhitas and second was based on modern techniques and then tabulated. **Results:** Ayurvedic drug list for Primary Health Care was formulated based on available modern as well as Classical evidence and tabulated in the form of a table. **Conclusion:** Ayurvedic drugs can be integrated in PHC to provide universal health care at primary level.

Key words: Primary Health Care, Evidence Based Study.

INTRODUCTION

Ayurveda recommends regulated diet, healthy life style, ethical principles supported with remedies and procedures to be followed everyday according to the season and individual need for the prevention of the disease and promotion of health. Every individual is identified on the basis of psycho somatic constitution. So he has to advocate individualized preventive and curative measures and also diverse prescription practices prevalent in different parts of the country based on the leads from Classical text.[1]

Universal health coverage is a way to ensure equity and equality in health care to all people irrespective of their social status, class, caste, creed and religion. But in a developing country like India it is very difficult for people of low socio-economic status to get access to healthcare and in case they seek healthcare, cost of medicines becomes major reason for out of pocket expenditure as all the medicines are not available in PHC . And also many people believe in Ayurveda but there are no proper services provided for the same. Another benefit of integrating Ayurveda in PHC, locally available drugs can be used for treatment as India has diverse variety of medicinal plants. So in this study with regard to Universal Health Coverage, it is an attempt to integrate Ayurvedic medicine in PHC in order to provide better health care to people using evidence based approach.

MATERIALS AND METHODS

Prioritization of the diseases for the study is based on National programs and other frequently seen diseases

Address for correspondence:
Dr. Rayeesa Zainab
2nd Year Student, MPH (Hons), Rajiv Gandhi Institute of Public Health and Centre for Disease Control, Jayanagar, Bangalore.
E-mail: rayeesa.zainab@gmail.com

Submission Date : 28/01/2017 Accepted Date: 29/02/2017

Access this article online

Quick Response Code

Website: www.jaims.in

DOI: 10.21760/jaims.v2i1.7510

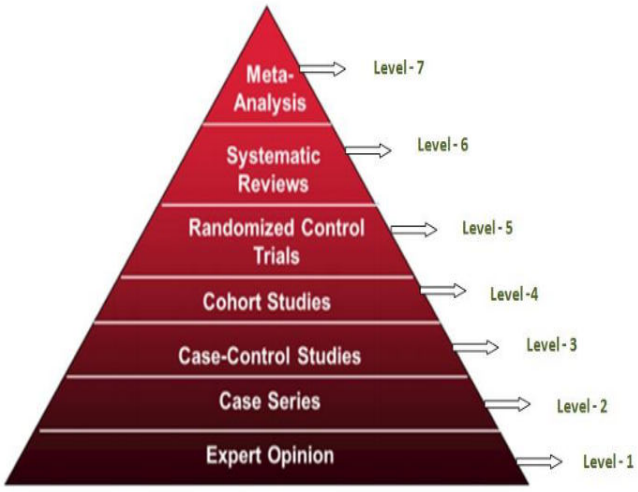
ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

in PHC. A thorough literature search was done for these diseases and their treatment. The following is the list of the databases searched,

1. Pubmed central
2. NRHM website
3. CCRAS (Central Council for Research in Ayurvedic Sciences)
4. Ayurvedic Samhitas

After filtering the articles according to our selection of diseases and their Ayurvedic treatment, grading of the evidence was done based on the pyramid of evidence. Those evidences which did not fit into the pyramid, the type of study was mentioned, for example - laboratory study, animal based study etc., and the results are shown in the form of a table. The Ayurvedic drugs (single and formulations) whose evidence Is not found in any database, reference was found from the Original Ayurvedic text and is mentioned in the table. In contrast with allopathic medicine, in Ayurveda, one particular drug will have different properties and can be used for different diseases with different *Anupana* (vehicle) i.e., water, honey, milk depending on the disease. And also one drug in combination with other drugs act differently in different diseases. So one may be found in different formulations but the action differs. This was kept in mind during the study.

Pyramid of evidence



RESULTS

Table 1: Ayurvedic treatment by single drugs.

No.	Ayurvedic diagnosis	Allopathic diagnosis	Ayurvedic treatment	
			Single drug	Evidence
National programs				
1.	Visham a jwara	Malaria	Cinnamon (57)	Laboratory study
		Dengue(34)	Papaya (58)	Systematic review/meta-analysis.
		Chikunguniya(26,35)	Ginger(63)	CCRAS
			Shallaki	Clinical trial
			Guduchi (23)	Literature review
2.	Rajayakshma	Tuberculosis (37, 38,40,41)	Yashtimadhu (glyzerizia glabra)(44)	Laboratory study
			Vasa (adathoda vasika) (39)	Clinical trial
3.	Madhumeha	Diabetes melitus	Kumari (Aloe vera)(47)	Meta – analysis (L7)
			Menthya (fenugreek)(46	RCT(L5)
			Neem (azadirecta Indica)(45)	Laboratory study
			Ashwagandha(48)	RCT(L5)
			Karavellaka(Bittergourd)(44)	RCT(L5)
			Madhunashini (gymnema sylvestris)	Literature review
			Haridra (turmeric) (42)	RCT(L5)

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

4.	Vatavyadhi	Stroke	Garlic(54)	Cross – sectional study.
			Ashwagandha(50)	Cross – sectional study.
5.	Hridroga	Hyper cholesteroelemia	Onion juice (52)	RCT(L5)-Pilot study
			Ashwagandha(21)	Literature review
			Arjuna	RCT (L5)
			Vacha churna (63)	CCRAS
		Dyslipedemia	Chirabilwa (holoptelea integefolia)	Clinical trial
			Lashuna (garlic)(53)	Laboratory study
6.	Manasa Roga	Mental illness Anxiety	Tulsi (62)	Literature review
			Ashwagandha	Animal based study
			Jatamaamsi (10)	Laboratory study
7.	Raktachaapa	Hypertension	Sarpagandha (rowalfia serpentina) (54)	Literature review
8.	Sandhivata	Osteoarthritis	Shallaki Shunti (Ginger) (55)	Clinical trial RCT (L5)
9.	Arshas	Haemorrhoids	Surana	Ashtanga Hrudaya-Arsho Chikitsa
10.	Pandu	Nutritional Anaemia	Punaranava	CCRAS(63)
			Dadima	
			Bhringaraja	
			Draksha	RCT (L5)
			Amalaki	
			Juice of these drugs+honey BD 3 months(22)	
11.	Amavata	Rheumatid arthritis	Black pepper (63)	CCRAS
			Guduchi (63)	CCRAS
			Shallaki	Clinical trial
			Ginger	RCT(L5)/Literature review
			Erandamoola Kwatha (66)	CCRAS
			Nirgundi kwatha(63)	CCRAS
			Pippali (8)	RCT
12.	Netra roga	Cataract	Chandana Hima	CCRAS(63)
			Bhringaraja Kwatha - tropical use	
			Amlaki kwatha	
			Haridra kwatha	
			Tulasi kwatha(tropical use)	
13.	Stree roga	DUB	Jatamamsi (13)	Laboratory study
			Amalaki churnam + honey	
			Nagakesara churnam + sugar	
			Laksha churnam + honey	
			Shatapushpa (8)	CCRAS(63)
		Leuchorroea	Amalaki churnam + honey	Clinical trial

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

			Nagakesara churnam + butter milk	
			Lodhra churna + water	CCRAS(63)
14.	Atisaara	Diarrhea	Bilwa(27)	Literature review
			Musta (Cyprus rotundus) (49)	Laboratory study
15.	Parinaama shoola	Hyperacidity (gastro – deudenal ulcers)	Amalaki churna(16)	Laboratory study
			Shatavari churna	Literature review
			Yashtimadhu churn (43)	Laboratory study
			Infusion of bilwa leaves (25)	Literature review
16.	Kamala (yakruth shotha)	Hepatitis	Kumari swarasa + honey	CCRAS(63)
			Bhumiamalaki kashaya + milk	
			Guduchi swarasa + milk	
			Amalaki swarasa + grape + sugar + honey.	
17.	Charma Roga + Kustha Nasha	Psoriasis	Haridra Churna + water (application)	Literature review
18.	Sheeta pitta	Urticaria	Ardraka swarasa + honey (63)	CCRAS
			Amalaki churna + warm water	CCRAS
			Haridra churna + warm water	Literature review
			Rasona (alium sativum) kalka + water / milk (21)	Clinical trial
19.	Kushta	Eczema	Nimbi patra churna + water	CCRAS (63)
			Tulsi swarasa + honey	
			Kahdira churna + warm water	
			Nimba churna	
			Haridra churna	
			Gandhaka	
20.	Khalitya	Hair loss	Bhringaraja leaves extract	Literature review
21.	Mutra roga	UTI	Gokshua churna (1)	Laboratory study
			Ela + cows urine	CCRAS (63)
			Shilajitu + honey	
			Amalaki rasam + jaggery	
22.	Krimi	Worm infestation	Vidanga churna	CCRAS(63)
			Bilwa churna	
23.	Kasa and swasa	Sinusitis	Ardraka + butter	Literature review
			Vibhitaki churna + water	
			Maricha + jaggery	
		Bronchitis	Vasa (adathoda vasika) (13)	Literature review
24.	Pratishyaya	Rhinitis	Tulsi (59)	Literature review
			Pepper(59)	
			Shunti (59)	

ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

Table 2: Ayurved treatment by formulations.

No.	Ayurvedic diagnosis	Allopathic diagnosis	Ayurvedic treatment	
			Formulation	Evidence
	National programs			
1.	Visham a jwara	Malaria	Ayush 64(63)	Laboratory study (on Rhesus monkeys and mice)
			Kiratatikta (Swertia chirita) (29)	Systematic review(L6)
			Saptaparna(Alstonia scholaris) (27,28,29,30)	Laboratory study
			Bhunimba(Andrographis paniculata)(31, 32,3)	Laboratory study
			Jwarahara dashemani(39)	Literature review
			Vettamaran + ginger juice(38)	Case report
			Guduchi satva(23)	Yogaratnakara Rajayaksh ma Chikitsa 1/11
			Indukanata ghrutam	Sahasra yoga – Ghritapra karana
		Dengue(34)	Bhunimba(Andrographis paniculata) + Tulsi (Occimum sanctum) (36,37)	Laboratory study
			Vettamaran (38)	Case report
		Chikunguniya(26,35)	Bhunimba(Andrographis paniculata)	Laboratory study
			Neem (azadiracta indica)	
			Rasna (alpinia galanga)	
2.	Rajayakshma	Tuberculosis (37, 38,40,41)	Decoction of guduchi + parpataka + kanthakari + vasa	Laboratory study
			Amrutarishta	
			Sudarshanarishta	
3.	Madhumeha	Diabetes melitus	Nishamalaki (43)	Laboratory study
			Avipattikara churna followed Nyagrodadhi ghana vati (combined therapy)(5)	Laboratory study
			Chyavanaprasha (12)	Clinical trial Laboratory/ case control
			Triphala (11)	Laboratory study
4.	Vatavyadhi	Stroke	Ksheerabala taila	Ay-Reference – Sahasra yoga
5.	Hridroga	Hyper cholesteroelemia	Triphala churna (6)	Laboratory study
			Vaunaadi kwatha (8)	Literature review
			Triphala guggulu(3)	Laboratory study

ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

			Amrutaadi guggulu(3)	Literature review
		Dyslipedemia	Ashwagandharishta(21)	Literature review
			Chyavanaprasha (12)	Case control study (L3)
			Arogyavardhini vati(24)	RCT (L5)
6.	Manasa Roga	Mental illness Anxiety	Manasa mitra vati	Ay Reference -Sahasra yoga
7.	Raktachaapa	Hypertension	Manasa mitra vati	Sahasra yoga
			Sarpagandhamishrana(57)	Literature review
			Arjuna + haritaki + shatavari + shunti + ashwagandha	Literature review
8.	Sandhivata	Osteoarthritis	Yogaraja guggulu (3,56)	Laboratory study /clinical trial
			Ashwagandha (withania somnifera) + Shallaki + Haridra + Zinc (Yashada Bhasma) (24)	Hospital based study
9.	Arshas	Haemorrhoids	Guda + Haritaki + buttermilk	CCRAS(63)
			Takrarishta	CCRAS(63)
			Chirubilwadi Kashaya (50)	Clinical trial
10.	Pandu	Nutritional Anaemia	Sutashekhara rasa + sitopaladi churna(10)	RCT(L5)
			Draksharishta(17)	Literature review
			Amalaki rasyana(19)	RCT(L5)
			Ayaskriti	CCRAS(63)
			Lohasava	
			Navayasa churna	
			Trikatrayadi loha (paediatric use – suspension IDA) (60)	RCT (L5)
			Mandura vatakam	CCRAS (63)
			Dadimadi ghrutam	
			Vyoshadi ghrutam	
			Dhatri arishta	
			Dhatri loha	
11.	Amavata	Rheumatid arthritis	Simhanada guggulu(21)	Clinical trial
			Vardhaman pippali(22)	Clinical trial
			Dashamoolarishta + Pippalai asava + vettamaran (63)	CCRAS
			Rasonadi kashya (18)	Clinical trial
			Vatari guggulu+ maharasnadi kwatha (21)	Clinical trial
12.	Stoulya	Obesity	Gomutra haritaki + diet control+ exersise (medicine advised if patient has no issues) (20)	RCT (L5)

ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

12.	Netra roga	Cataract	Triphala churna /kwatha (aqueous extract)(61)	Laboratory study
		Allergic conjuctivitis	Chandrodaya varti	CCRAS
			Haridra khanda	
13.	Stree roga	DUB	Ashokarishta+ashwagandha churna(5)	Clinical trial
			Pushyanuga churna	CCRAS(63)
			Lodhrasava	
			Chandraprabha vati(65)	Laboratory study
			Rajah pravrtini vati(63)	CCRAS
		Leuchorroea	Pushynuga churna	CCRAS(63)
			Balasarpi	
			Ashokarishta	
			Triphala /panchavalkala kwatha for Vaginal douche (14)	Clinical trial
14.	Atisaara	Diarrhea	Shadanga toyam	Ashtanga hrudaya-atisaara chikitsa
			Bilwaadi lehyam	
15.	Parinaama shoola	Hyperacidity (gastro – deudenal ulcers)	Avipattikara churna (4)	Laboratory study
			Drakshadi lehyam(20)	Laboratory study
			Dadimaadi ghruta	Ashtanga Hrudaya – Atisaara chikitsa
16.	Kamala (yakruth shotha)	Hepatitis	Vasaguduchyadi kashaya	CCRAS(63)
			Patola katurohini kwata	
			Guduchyadi kwatha	
			Sudarshana churna	
			Avipattikara churna	
			Punarnava mandura	
17.	Charma Roga + Kustha Nasha	Psoriasis	Eladi churna,	CCRAS(63)
			Manjistadi quatha	
			Tiktaka ghruta	
			Marichyadi taila	
18.	Sheeta pitta	Urticaria	Haridra khanda	CCRAS(63)
			Manjistadi kwatha	
			Triphala churna	
			Nimbadi churna	
19.	Kushta	Eczema	Manjistadi Lepa(15)	Clinical trial
			Marichyadi tailam	
			Pancha tiktaka ghrutam	Ashtanga hrudaya – kushta chikitsa
			Nimbadi churna/taila	
20.	Khalitya	Hair loss	Eclypta alba (bhringa raja) leaves 15% + centalia ashiatica (manduka parni) leaves15% + T. Chebula fruit (haritaki) 10%, T. Bellarica (vibhitaki) fruit 10 % + phyllantus	Literature review

ISSN: 2456-3110 REVIEW ARTICLE Jan-Feb 2017

			emmblica (amalaki) fruit 15% + yashtimadhu (g. Glabra root 15% + guduchi T. cardifolia stem 10%, tribullus terestris friuits 10%	
21.	Mutra roga	UTI	Gokshuradi guggulu(7)	Clinical trial
			Punarnavadi kwatha(14)	Clinical trial
			Chandra prabhavati(62)	Laboratory study
			Bhruhtyadi kwatha	CCRAS(63)
			Dashamoola haritaki	
			Punaranavasava	
			Varunadi kwatha (7)	Clinical trial
22.	Krimi	Worm infestation	Krimigna vati (63)	CCRAS(63)
23.	Kasa and swasa	Sinusitis	Anu tailam	CCRAS(63)
			Rasnadi churna	
			Vyoshadi vati(9)	Clinical trial
			Pathyashadanga Kwatha	Sahasra yoga
		Bronchitis	Talisaadi Churna (2)	Laboratory study
			Sitopaladi churna(2)	Laboratory study
			Dashamoolakatutrayam(2)	Laboratory study
			Kushmanda avalehham	Ashtanga hrudaya – kasa chikitsa
24.	Pratishyaya	Rhinitis	Vyoshadi vatakam (9)	Clinical trial
			Dhoopana-varti (daruharidra + ghee)	CCRAS(63)

DISCUSSION

With this study evidence for many locally available drugs and Ayurvedic formulations, is found which can be used in the PHC in order to treat the selected diseases. As out of pocket expenditure is one of the major problem in developing country like India, and people with low socio economic status are the most affected. This study is a first step towards providing Universal health coverage to people by incorporating Ayurvedic drugs and formulation in PHC. And as many of the drugs can be grown locally and local treatment can be provided, and the cost to be spent on specific drugs decreases hence, it can be cost effective.

This study tries to prove that Ayurvedic (single drugs and formulations) can be incorporated in PHC's using an evidence based approach. The evidence we have collected is based on modern techniques and Ayurvedic Samhitas (Original texts). Further studies are to be conducted in this regard and to support our present study.

Limitations

1. The evidence graded is based on the pyramid of evidence, and those drugs which do not fall under any level of this pyramid, the type of study is mentioned, therefore further studies are needed to be conducted in this regard.

2. In contrast to Allopathic diagnosis and treatment, Ayurveda differs in both. The diagnosis method differs as well as treatment. Therefore one single drug in different combinations and with different vehicles (*Anupana*) can be used for different diseases. So exact comparision with Allopathic diagnosis and treatment is a bit difficult. But we have tried our best to compare both the diagnosis and provide list of Ayurvedic medicines for their integration in PHC.

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

3. Concentration of our study is only limited to pharmaceutical aspect.

CONCLUSION

The study aims to provide set of Ayurvedic medicines to be incorporated in PHC in view of providing Universal Health Care for all. As health is a human right and in order to have a better country and to add to the economy of our country we need healthy individuals. Our study is the first step towards this direction. In conclusion, mentioned set of medicines on evidence based approach, can be integrated in PHC's. Further studies are to be conducted to support our view.

REFERENCES

1. Ashok Kumar Bagepalli Srinivasa, Lakshman Kuruba, Saleemulla Khan, Gopi Setty Saran, Anti urolithiatic activity of gokshuradi churan, an ayurvedic foermulation by invitro method, Adv Pharm Bull. 2013 Dec; 3(2): 477–479
2. Inder K. Makhija, Chandrashekara S. Shreedhara, H. N. Aswatha Ram Pharmacognosy, Mast cell stabilization potential of sitopaladi churan: an ayurvedic formulation; Res. 2013 Oct-Dec; 5(4): 306–308
3. Manisha R. Sharma, Charmi S. Mehta, Dipali J. Shukla, Kalapi B. Patel, Manish V. Patel, Shiv Narayan Gupta, Multi model ayurvedic management for sandhigata vata(osteoarthritis of knee joints); Ayu. 2013 Jan-Mar; 34(1): 49–55
4. Sudesh Gyawali, Gulam Muhammad Khan, Shreekrishna Lamichane, Jaya Gautam, Saurav Ghimire, Rashmi Adhikari, Reshma Lamsa, Evaluation of antisecretory and anti ulcerogenic activities of avipattikar churan on the peptic ulcers in experimental rats; IJ Clin Diagn Res. 2013 Jun; 7(6): 1135–1139. Published online 2013 Jun 1.
5. Mansi B. Modi, Shilpa B. Donga, Laxmipriya Dei, Clinical evaluation of ashokarishta, ashwagandha churan and prawal pishti in the management of menopausal syndrome; Ayu. 2012 Oct-Dec; 33(4): 511–516
6. Kai Lu, Debanjan Chakroborty, Chandrani Sarkar, Tingting Lu, Zhiliang Xie, Zhongfa Liu, Sujit Basu, Triphala and its active constituents chebulinic acid are natural inhibitors of vascular endothelial growth factor-a mediated angiogenesis; PLoS One. 2012; 7(8): e43934. Published online 2012 Aug 24.
7. Manish V. Patel, S. N. Gupta, Nimesh G. Patel, Effects of Ayurvedic treatment on 100 patients of chronic renal failure (other than diabetic nephropathy); Ayu. 2011 Oct-Dec; 32(4): 483–48
8. Mamta Kumari, B. K. Ashok, B. Ravishankar, Tarulata N. Pandya, Rabinarayan Acharya, Anti inflamatory activity of 2 varieties of pippali(piper longun linn), Ayu. 2012 Apr-Jun; 33(2): 307–310.
9. Vivek Sharma Dr, A clinical study of efficacy of vyoshadi gutika and pippaliyadi churna avapida nasya in the management of pratishyaya, From 5th World Ayurveda Congress 2012 Bhopal, Madhya Pradesh, India. 7-10 Dec 2012 Anc Sci Life. 2012 Dec; 32(Suppl)
10. Gloria Karkada, K. B. Shenoy, Harsha Halahalli, K.S. Karanth, Nardostachys jatamansi extract prevents chronic restrained stress induced learning nad memory deficits in a radial arm maze tas;k Nat Sci Biol Med. 2012 Jul-Dec; 3(2): 125–132.
11. Aditya Ganeshpurkar, Shubhangi Jain, Sonam Agarwal, Experimental studies on glycolytic enzyme inhibitory and antiglycation potential of triphala; Ayu. 2015 Jan-Mar; 36(1): 96–100.
12. Milind Parle, Nitin Bansal, Anti amnesic activity of an ayurvedic formulation chyavanaprash in mice; Evid Based Complement Alternat Med. 2011; 2011: 898593. Published online 2011 Jun 5.
13. Praveen Kumar Sharma, Sharad Johri, B. L. Mehra, Efficacy of vasadi syrup and shwashghna dhooma in the patients of COPD (Shwasa roga);Ayu. 2010 Jan-Mar; 31(1): 48–52.
14. G. S. Prashanth, M. S. Baghel, B. Ravishankar, S. N. Gupta, Miten P. Mehta, A clinical comparative study of the management of chronic renal failure with punaranavadi compound; Ayu. 2010 Apr-Jun; 31(2): 185–192
15. Pallavi A. Hegde, P.H.Hemantha Kumar, Utility of manjisthadi lepa in soft tissue inflamation; Anc Sci Life. 2009 Jan-Mar; 28(3): 40–41.
16. B Kalsariya, P Prajapati, P Vaishnav, L Singh, S Gupta, B Patgiri, Amalaki rasayana, an ayurvedic preparation: to evaluate its effect against experimental gastric ulcers in albino rats; BMC Complement Altern

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

Med. 2012; 12(Suppl 1): P11. Published online 2012 Jun 12.

17. Divya Pillai, Nancy Pandita, Determination of quality standards for drakshrishta, a polyherbal ayurvedic formation; Indian J Pharm Sci. 2016 Jan-Feb; 78(1): 129–135.
18. Raja Ram Mahto, Alankruta R. Dave, V. D. Shukla, A comparative study of rasona rasnadi ghanvati and simhanada guggulu on amavata with special reference to rheumatoid arthritis; Ayu. 2011 Jan-Mar; 32(1): 46–54.
19. Shaizi Layeeq, Anup B. Thakar, Clinical efficacy of amalaki rasayana in the management of pandu(iron deficiency anemia ;Ayu. 2015 Jul-Sep; 36(3): 290–297.
20. Ritesh A. Gujarathi, Rambabu Dwivedi, Mahesh Kumar Vyas, An observational pilot study on the effect of gomutra haritaki, diet control and excersise in the management of sthoulya(obesity); Ayu. 2014 Apr-Jun; 35(2): 129–134.
21. Narendra Singh, Mohit Bhalla, Prashanti de Jager, Marilena Gilca, An overview on ashwagandha ; a rasayana(rejenuvator of ayurveda) ; Afr J Tradit Complement Altern Med. 2011; 8(5 Suppl): 208–213. Published online 2011 Jul 3.
22. Anamika Soni, Kalapi Patel, S. N. Gupta, Clinical evaluation of vardhaman pippali rasayana in the management of amavata (rheumatoid arthritis; Ayu. 2011 Apr-Jun; 32(2): 177–180.
23. B. K. Ashok, B. Ravishankar, P. K. Prajapati, Savitha D. Bha, Anti pyretic activity of guduchi ghrutha formulations in albino rats; Ayu. 2010 Jul-Sep; 31(3): 367–370.
24. Gajendra Kumar, Amita Srivastava, Surinder Kumar Sharma, Yogendra Kumar Gupta, The hypolipedimic activity of Ayurvedic medicine , Arogyavardhini vati in Triton WR-1339- induced hyperlipedimic rats: a comparision with phenofibrate; Journal of Ayurveda & Integrative Medicine | July-September 2013 | Vol 4 | Issue
25. K.P.Sampath kumar*, M.Umadevi, Debjit Bhowmik, Durgesh Mohan Singh, A.S. Dutta, Recent trends in medicinal uses and health benefits of Indian traditional herbs aegke marmelos); www.thepharmajournal.com Vol. 1 No. 4 2012
26. Ruchi Yadav , Varun Tyagi , Sachin N Tikar, Ajay K Sharma, Murlidhar J Mendki, Ashok K Jain, Devanathan Sukumaran, Differencial larval toxicity and oviposition altering activity of some indigenous plant extracts against dengue and chikunguniya vector Aedes albopictus; J Arthropod-Borne Dis, December 2014, 8(2): 174–185.
27. Siu Kuin Wong, Yau Yan Lim, Noor Rain Abdullah, Fariza Juliana Nordin2Wong et al, Assesment of anti proliferative and anti plasmodial activities of five selected apocyanaeceae species; BMC Complementary and Alternative Medicine 2011, 11:3
28. S.Bhavani, M.D(S). PGDPV. S.Bhavani , Rreview on antipyretics and analgesics herbs in siddha medicine;J. Pharm. Sci. & Res. Vol. 7(10), 2015, 812-817
29. Pooja Sharma, Rajiv Sharma, H. S. Rao and Dinesh KumarSharma et al, phytochemistry and medicinal attributes of A. scholaris : A review; IJPSR, 2015; Vol. 6(12): 505-513.
30. Giby Abraham. Global J Res. Med. Plants & Indigen. Med. | Volume 3, Issue 7 | July 2014 | 303–311
31. Raj K.Tiwari, R. Pandey, S. S. Shukla, Prashant Tiwari, H. Shah; A review on hepatoprotective herbs used in Ayurveda; Research Journal of Pharmacognosy and Phytochemistry. 6(3): July- September, 2014, 122-125
32. Archana Giri, Lakshmi Narasu Mangamoori Soma Roy, Kiranmayee Rao, Ch. Bhuvaneswari, Phytochemical analysis of andrographis paniculata extract and its anti microbial activity; World J Microbiol Biotechnol (2010) 26:85–91
33. Keerti Gautam, Padma Kumar & Sawitri Poonia, J Vector Borne Dis 50, September 2013, pp. 171–178
34. Leon IC Tang, Anna PK Ling, Rhun Y Koh, Soi M Chye and Kenny GL Voon, Tang et al, Screening of antidengue activity in methanol extracts of medicinal plant; BMC Complementary and Alternative Medicine 2012, 12:3
35. K. Sangeetha and S. Rajarajan Sangeetha and Rajarajan, invitro antiviral activity of Indian medicinal plants to asian and east central south African lineates of chikunguniya virus; IJPSR, 2015; Vol. 6(2): 692-697.
36. Nishan Chatterjee, Sunipa Biswas, Nimai Chandra Saha, Surjyo Jyoti Biswa, Andrographis paniculata a traditional herb with pharmacological properties : a

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

review; Global J Res. Med. Plants & Indigen. Med. | Volume 3, Issue 5 | May 2014 | 206–214

37. Purva D. Bhatter, Pooja D. Gupta, and Tannaz J. Birdi, Activity of medicinal plants extract on multiplication of mycobacterium tuberculosis under reduced oxygen conditions using intracellular and axenic assays; Hindawi Publishing Corporation International Journal of Microbiology Volume 2016, Article ID 8073079, 6 pages
38. Dhrubajyoti Das, Maina Borah, Anil Kumar Singh, Robin Das and Hari Prasana Deka Boruah Das et al, molecular docking of phytochemical as ftsz cell division protein inhibitor in mycobacterium tuberculosis; IJPSR, 2015; Vol. 6(1): 463-472.
39. S IGNACIMUTHU and N SHANMUGAM, anti microbacterial activity of two natural alkaloids, vasicine acetate and 2- acetyl benzyl amine, isolated from Indian shrub adhtoda vasica Ness. leaves J. Biosci. 35(4), December 2010, 565–570,
40. Soundhari Chidambaram and Rajarajan Swaminathan, determination of antitubercular activity of four Indian medicinal plants against mycobacterium tuberculosis by broth microdilution method; IJPSR, 2013; Vol. 4(10): 3932-3937
41. S. Chidambaram and R. Swaminathan, invitro anti microbacterial activity of selected Indian medicinal plants to resistant strains of micobacterium tuberculosis; IJPSR, 2016; Vol. 7(10): 4130-4133.
42. N. Maithili Karpaga et al, Efficacy of Turmeric as an adjuvant therapy in type -2 diabetes patients; Indian journal of clinical bio chemistry, April- june: 2015 ;30(2): 180-186.
43. Jayashreeshriram Dewane et al, Preventive and protective effect of nishamalaki in STZ induced diabetic complications in wista r rats; Journal of clinical and diagnostic research,:2016;june, vol10(6).
44. Inayat U Rahman et al, Lower hypoglycaemic but higher antiatherogenic affects of bitter melon than glibenclamide in type -2 diabetes patients; nutrition journal :2015;14:13
45. Asma Jalil et al, Screening and design of anti diabetic compounds sourced from neem (Azadiracta indica) ;Bio information Vol 9(20).
46. Narsingh Verma et al, A Multicentric clinical study to determine the efficacy of a novel fenugreek seed (Trigonella foenum – graceum) extract (fenfuro ™) in patients with type 2 diabetes, food and nutrition research :2016.
47. Dick William R et al, Reduction of fasting Blood glucose and haemoglobin A1C using oral Aloe vera : A meta snalysis, Mary Ann Libert publications, vol 22 , issue 6, june 17:2016.
48. M. Umadevi et al, Traditional and medicinal uses of Withania Somnifera, the pharma innovation vol 1 No, 9 2012)
49. Shivakumar et al, Anti microbial activity of root extracts of cyperus rotundus (linn) using Diarrhoea inducing microbes; research journal . pharmacology and pharmaco dynamics 5(4):2013;244 -246
50. Sinimol T.P et al, Anti dyslipedemic effect of the stem bark of chirabilwa (Holoptelea Integrifolia planch) – A clinical trial ; global journal research in medicinal plants and indigenous medicine; vol 3, issue 5: may 2015
51. Rodrigo Arreola et al, Immunomodulation and anti inflamatory effects of garlic compounds; journal of immunology Research; vol 2015.
52. T- Song – ming - lu et al, Hypercholesterolemic efficacy of Quercetin rich onion juice in healthy mild Hypercholesterolemic adults: A pilot study (RCT): Plant Foods Human Nutrition:2015; 70: 395.
53. Lau K. K et al, Garlic intake is an independent predictor of endothelial function in patients with ischemic stroke :2006 .
54. Douglar lobay, Rowalfia in the treatment of hypertension, Integrative medicine ; Vol 14, No 3 : June 2015
55. Mozzaffari – Khosravi et al, Effect of ginger supplementation on Pro inflammatory cytokinines in older patients with osteoarthritis, outcomes of RCT : 2013.
56. P. Suman et al, In-vitro Antiarthritic, anti oxidant and in- vivocytotoxic activity of yogaraja guggulu, IJPSR :2015;Vol 6(7);3005-3013
57. Shirin Parvazi et al, the effect of Aqueous extractmetabolome of P. falciparum using 1HNMR Spectroscopy, Journal of Tropical medicine:20
58. Nisar Ahmad et al,Dengue fever treatment with Caprica Papaya leaves, Asian Pacific Journal of Tropical Medicine, 2011, August : 1 (4): 330- 333.

ISSN: 2456-3110 **REVIEW ARTICLE** Jan-Feb 2017

59. Mark Mourice Cohen, Tulsi ocimum sanctum, a herb for all reasons, Journal of ayurveda and integrated medicine, October- December 2014, vol(5), issue (4)

60. Abhimanyu kumar et al, A clinical study on pandu roga iron deficiency anaemia with trikatyadi loha suspension in children, journal of Ayurveda and integrative medicine, October – December 2012, vol (3), issue (4)

61. Jothsna shree nagesh et al, Anti bacterial efficacy of triphala an in vivo study, Indian journal of dental research 23(5):2012

62. Suneeva S christa et al, Modulatory effect of Chandraprabhavti on anti microbial peptides and inflammatory markers in kidneys of mice with urinary tract infection, Indian journal of kidney diseases, vol (7) no (5), September 2013.

63. Central Council of Research in Ayurvedic Sciences. http://www.ccras.in (accessed 28th November 2016).

How to cite this article: Rayeesa Zainab, Karthika .P, Irfanahemad A. S, Gulappa M.D. Integration of Ayurvedic Medicine in Public Health Delivery System at primary level for UHC - An Evidence Based Study. J Ayurveda Integr Med Sci 2017;1:193-204
http://dx.doi.org/10.21760/jaims.v2i1.7510

Source of Support: Nil, **Conflict of Interest:** None declared.

****