

**Central Ayurveda Research Institute (CARI), Bengaluru****(Central Council for Research in Ayurvedic Sciences, Ministry of AYUSH, Govt. of India)**

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(Diabetes mellitus) awarded by the Ministry of AYUSH, Govt. of India

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**CCRAS-CARI Bengaluru****Activities and Achievements 2023-24****“Centre of Excellence in Research and Clinical Services for Madhumeha (Diabetes Mellitus)”****1. Background**

Central Ayurveda Research Institute was awarded “Centre of Excellence in Research and Clinical services for Madhumeha (Diabetes mellitus)” by the Ministry of AYUSH, Govt of India in March 2021. The total fund sanctioned is Rs.7,24,80,400/- for a duration of four years (3+1-year extension upto March 2023 due to Covid pandemic). The scheme got initiated in April 2021.

**Total Fund release so far**

Sl. No.	Instalments released	Total amount released	Date of Sanction	UC Status
i.	1 <sup>st</sup> Instalment	Rs.2,88,00,000/- *	05-03-2021	UC accepted
ii.	1 <sup>st</sup> part of 2 <sup>nd</sup> Instalment	Rs. 20,00,000/-	20-01-2023	Partial by the Ministry
iii.	2 <sup>nd</sup> part of 2 <sup>nd</sup> Instalment	Rs. 50,00,000/-	03-07- 2023	
iv.	3 <sup>rd</sup> part of 2 <sup>nd</sup> Instalment	Rs. 1,04,86,200/-	08-11-2023	

\* The above excludes Rs.1,92,160/- that was returned to the Ministry on 16-06-2021 as per the Ministry’s directions dated 15-06-2021.

**Expenditure in 2023-24**

Sub-heads	Total sanctioned in Rs.	Total expenditure in Rs.	Balance in Rs.	Exp. In %
Salary	1,74,86,200.00	1,03,26,603.00	10,19,797.00	89.73
Non-recurring		19,93,600.00	11,400.00	
Recurring		33,70,200.00	7,64,600.00	
<b>Total</b>	<b>1,74,86,200.00</b>	<b>1,56,90,403.00</b>	<b>17,95,797.00</b>	

**2. Summary of achievements against deliverables (April 2023 to March 2024)**

The Centre of Excellence scheme was sanctioned to CARI, Bengaluru with the following deliverables and targets for the second year. Achievements against deliverables are tabulated below:

Sl. No.	Deliverables	Achievements under the CoE scheme
1.	Validation of Ayurveda approaches for Diabetes mellitus and documentation of outcome of approaches – 200 patients	Treatment approaches for 1395 OPD patients have been documented and validation of outcome of 200 patients done (against the target of 200 patients).
2.	Prevention and management of Diabetes with multi-specialty approach of 500 pre-diabetics and diabetics	<p>A total of 906 patients were under Multi specialty care during the reporting period :</p> <ul style="list-style-type: none"> <li>• Yoga training to patients with special reference to diabetes management - 87 patients.</li> <li>• Number of patients of diabetes managed with combination of modern medicine and Ayurveda is 819.</li> <li>• Patients are also managed by different specialists of Ayurveda such as Shalya tantra (Diabetic foot, Diabetic ulcer, Venous insufficiency, anorectal disorders, Diabetic carbuncles etc.)- 304 patients.</li> <li>• Shalakya tantra (Diabetic retinopathy, cataract, hearing loss, tinnitus, periodontitis, gingivitis etc.)- 135 patients.</li> <li>• Panchakarma- 62 patients.</li> </ul>
3.	Initiation of Clinical trials for 2 selected anti-diabetic formulation	<ul style="list-style-type: none"> <li>• Pilot clinical studies on validation of 4 selected anti-diabetic formulations, initiated last year have been completed this year.</li> <li>• Further, fresh clinical trial by including advanced outcome parameters such as gut microbiome has been initiated on shortlisted formulation, based on results of animal studies and pilot clinical trials.</li> <li>• Further, the bioavailability clinical study on 2 shortlisted formulations have been planned.</li> <li>• Screening of patients started after obtaining IEC clearance and CTRI registration under both the new clinical trials.</li> </ul>
4.	Development of SOPs for 2 ready to eat/cook food recipes through scientific validation	<ul style="list-style-type: none"> <li>• SOPs for two ready to cook food recipes were developed in consultation with Ayurveda experts, NIN Hyderabad &amp; CSIR-CFTRI Mysuru, in collaboration with Centre for Incubation, Innovation, Research and consultancy (CIIRC), Bengaluru.</li> <li>• Screening of patients under the clinical trial to evaluate these two ready to cook dietary supplements for its antidiabetic property in patients of type -2 diabetes mellitus has been initiated, after obtaining IEC clearance and CTRI registration.</li> </ul>

5.	Development of 5 IEC materials, audio visual aids	<ul style="list-style-type: none"> <li>• 5 IEC materials for general public are developed and uploaded on our website and social media platforms.</li> <li>• COE you tube channel is functional for reaching out to wider population <a href="https://www.youtube.com/channel/UC3TBI39pJCDvKRqUQculpSg">https://www.youtube.com/channel/UC3TBI39pJCDvKRqUQculpSg</a> . 6 videos related to different aspects of Diabetes uploaded during the reporting period.</li> </ul>
6.	Training on diabetes and diet to public and patients– 10 camps	<p>Conducted 20 trainings against the target of 10.</p> <ul style="list-style-type: none"> <li>• 10 Diabetes awareness talks for general public were conducted at various locations in Bengaluru with total beneficiaries being 748.</li> <li>• 10 special training programmes were conducted for patients of Diabetes at CARI Hospital focussing on understanding Diabetes, Diet in Diabetes and Lifestyle modifications in Diabetes with total beneficiaries –282.</li> </ul>
7.	Yoga training camps to public and patients – 10 camps	12 Yoga camps are conducted at CARI Hospital and in outreach camps with total 325 beneficiaries.
8.	Networking with local governance for camps – 30 camps	A total of 30 camps focussing mainly on Diabetes screening and management were conducted under the CoE scheme with total beneficiaries 915, in collaboration with local Anganwadi, PHC, CHC etc.
9.	Training for UG/PG students of Ayurveda- 10 programme	10 training programmes on research methodology, biostatistics, chromatographic techniques and comprehensive management of diabetes were conducted for Final year UG/First year PG students from different colleges of Karnataka with 426 trainees.
10.	e healthcare initiatives- development of portal for interaction with patients or community through SMS alerts, tele-consultation, maintenance of online medical record of 500 patients with population coverage of 10000	<p>E- health coverage is extended to more than 1,00,000 population</p> <ul style="list-style-type: none"> <li>• Institute website <a href="http://www.cari.gov.in">www.cari.gov.in</a> both in English &amp; Hindi language is fully functional with total impressions of 154076.</li> <li>• Lab and pharmacy data management software coverage is more than 32000 patients.</li> <li>• Teleconsultation portal is operating over the website since the month of January 2023 and 70 patients were registered under the teleconsultation portal during the reporting period.</li> <li>• Data of 1395 OPD patients and 915 camp consultations is being maintained digitally.</li> <li>• A YouTube channel has been created for reaching out to wider population through audio-visual medium which is active since January 2023 with 6 videos uploaded during April2023-March 2024.</li> </ul>

### 3. Comprehensive report

The report is broadly put under the heads of Clinical Services, Trainings and Research Activities, Upgradation of the Institute, Scientific Publications, IEC materials and Expenditure details.

#### 3.1 Clinical services

**3.1.1 Special OPD for Diabetes:** Under the scheme, a specialized OPD for patients of Madhumeha is made functional since 22<sup>nd</sup> July 2021. The patients are provided with free consultation, medicines, laboratory investigations and food & lifestyle counselling. The specialized OPD has catered to 1395 diabetic patients and 6021 follow-up visits since inception offering Ayurveda treatment totalling up to 7416 visits during the reporting period. 869 patients have had free laboratory investigations under the scheme. An extensive and detailed data was collected from all the patients attending the special diabetes OPD under CoE, which was digitally managed using e-formats.

Department	Male	Female	Total
OPD New patients	837	558	1395
OPD Follow-up patients	3505	2516	6021
Total	4342	3074	7416

**3.1.2 Yoga advocacy:** Free yoga classes were conducted at CARI Hospital and in outreach camps and 412 patients have been benefitted during the reporting period. Classes are conducted under the guidance of professional Yoga teachers. A specialized Yoga module for Diabetes has been developed and is being instructed to patients of Diabetes on a regular basis. Translation of Common Yoga Protocol into Kannada has been done and in circulation. Additionally, Yoga camps have been conducted at different venues near the hospital reaching out to the high risk & Diabetic population.

**3.1.3 Outreach Camps:** Diabetes health camps were conducted from time to time to screen patients for diabetes and diabetic-related issues, provide health-related education, doctor consultation, distribute medicines to treat diabetic and pre-diabetic problems and refer patients to the hospital for further follow-ups as needed. These camps were based on diabetes care and awareness concepts, facilitating the general population to learn how to manage diabetes. Patients were motivated and supported by peers and devoted experts. During the reporting period, 30 Medical camps were conducted under CoE, with the number of beneficiaries totalling to 915.

Sl. No.	Date	Camp location in Bengaluru	Beneficiaries		
			Male	Female	Total
1	25.05.2023	Maruti nagar, Utharahalli	5	16	21
2	16.06.2023	Nayandahalli	4	18	22
3	23.06.2023	BESCOM, Talaghattapura	30	0	30
4	18/07/2023	BBMP office, Vijayanagar	15	31	46
5	26/07/2023	Kengeri, Satellite Town	28	17	45

6	11/08/2023	Kaggalipura Police station	18	3	21
7	17/08/2023	Jain temple, Kaggalipura	6	16	22
8	17/08/2023	Shanthi Dama Old age home	7	15	22
9	24/08/2023	Anganwadi Maruthi nagara	15	21	36
10	24/08/2023	Ashraya seva trust	2	32	34
11	31/08/2023	Thulasi matta	19	13	32
12	01/09/2023	Tulasi Matta, Agara	16	20	36
13	02/09/2023	Tulasi Matta, Agara	14	17	31
14	23/09/2023	Royal palms layout, 1 block	8	14	22
15	23/09/2023	Royal palms layout, 2 block	06	23	29
16	23/09/2023	Royal palms layout, 3 block	09	13	22
17	30/09/2023	Vasudevapura	09	12	21
18	30/09/2023	Veerabadrswamy temple	07	14	21
19	11/10/2023	Kasturamma badavane, Kengeri	10	08	18
20	20/10/2023	Nayandadahalli	05	32	37
21	28/10/2023	Anjanapura	09	14	23
22	03/11/2023	Jawaharlal Nehru Centre For Advanced Scientific Research JNCASR –batch 1	24	15	39
23	03/11/2023	JNCASR- batch 2	22	17	39
24	6/11/2023	CSIR - National Aerospace Laboratories (NAL)	26	10	36
25	6/11/2023	CSIR - National Aero–batch 1space Laboratories (NAL) - batch 2	24	11	35
26	8/11/2023	CSIR Fourth Paradigm Institute	11	13	24
27	24/11/2023	RV College (Department Civil engineering) –batch 1	20	07	27
28	24/11/2023	RV College (Mechanical engineering) - batch 2	19	08	27
29	24/11/2023	RV College (Electrical engineering) –batch 3	15	23	38
30	20/01/2024	Sri Shanimahatma Temple	30	29	59
<b>Total</b>			<b>433</b>	<b>482</b>	<b>915</b>

**3.1.4 e-Healthcare initiatives:** Under the Centre of excellence scheme a static website [www.cari.gov.in](http://www.cari.gov.in) has been functional for the promotion and introducing e-healthcare initiatives, compliant with Digital India, to reach out to wider population. Total population coverage under e-healthcare initiatives is 1,89,610 during the reporting period.

Sl. No	Initiative	Population coverage
1	e-Medical records (OPD and camp)	2310
2	Website impressions	154076
3	Teleconsultation	70
5	Social media reach	909
6	AYUSLAB-Clinical lab	4929
7	AYUSLAB-Pharmacy	27316
	<b>Total beneficiaries</b>	<b>189610</b>

### 3.2 Training programmes

Training programmes were conducted in four categories viz. 1. for general public 2. for patients 3. Yoga training camps and 4. Ayurveda UG/ PG students.

**3.2.1** Ten training programmes for general public to raise awareness about Diabetes, its diagnosis, prevention and management through diet and lifestyle led by Dr. Sulochana Bhat, the PI of the scheme with total beneficiaries-748

Sl. No.	Date	location in Bengaluru	Resource person	Participants
1	23/06/2023	BESCOM office, Thalagattapura	Dr. Kavya, Dr.Monica	30
2	18/07/2023	BBMP office, Vijayanagar,	Dr. Kavya N	46
3	11/08/2023	Kaggalipura Police station	Dr Vrinda	21
4	17/08/2023	Shantidhama Old age home	Dr Kavya N	22
5	24/08/2023	Anganawadi, Maruti Nagar	Dr kavya N	36
6	24/08/2023	Ashraya Seva trust	Dr Chandni	34
7	21/09/2023	Students of Jyoti Institute of Technology- batch 1	Dr. Chandini Chandrashekar	45
8	21/09/2023	Students of, Jyoti Institute of Technology- batch 2	Dr. Kavya	38
9	21/09/2023	Students of Jyoti Institute of Technology- batch 3	Dr. Vrinda	34
10	23/09/2023	Royal palms layout, 1 <sup>st</sup> block	Dr. Kavya	22
11	11/10/2023	Kasturamma badavane, Kengeri	Dr. Vrinda	18
12	20/10/2023	Nayandadahalli	Dr. Kavya N	37
13	28/10/2023	Anjanapura, Bengaluru	Dr.Chandini	23
14	31/10/2023	Endocrinology Centre, Marenahalli	Dr. Vrinda Dr. Sharada	150
15	03/11/2023	Jawaharlal Nehru Centre For Advanced Scientific Research	Dr.Kavya N	78
16	6/11/2023	CSIR - NAL	Dr. Chandini	90
17	8/11/2023	CSIR Fourth Paradigm Institute	Dr.Kavya N	24
<b>Total</b>				<b>748</b>

**3.2.2** Ten training programmes for patients at CARI Hospital about Diabetes, its diagnosis, prevention and management through diet and lifestyle followed by special training on food recipes and diet in Diabetes with total beneficiaries -282.

Sl. No.	Date	Resource person	Participants
1	29.05.2023	Dr. Chandini Chandrasekharan, Dr. Monica	24
2	30.05.2023	Dr. Kavya N, Dr. Monica	32
3	20.06.2023	Dr. Vrinda, Dr Monica	26
4	10/07/2023	Dr. Chandni Chandrasekharan	31
5	12/07/2023	Dr Vrinda	29

6	08/08/2023	Dr Kavya N	35
7	18/08/2023	Dr Monica	18
8	19/10/2023	Dr Sharada Anand	19
9	01/01/2024	Dr. Chandni Chandrasekharan	35
10	30/01/2024	Dr. Kavya	33
		<b>Total</b>	<b>282</b>

**3.2.3** Twelve Yoga training camps were held at various places in and around CARI Hospital with an intention to introduce Yoga and lifestyle changes in Diabetic and pre-diabetic populations with total beneficiaries -325.

Sl. No	Details	Location	Date	Beneficiaries
1.	Yoga training for KIIMS MBBS Internees	CARI, Hospital	4/04/2023	24
2.	Yoga training for KIIMS MBBS Internees	CARI, Hospital	18/04/2023	28
3.	Yoga training for KIIMS MBBS Internees	CARI, Hospital	25/04/2023	4
4.	Yoga training of patients and attenders	CARI, Hospital	29/05/2023	24
5.	Yoga training and attenders	CARI, Hospital	30/05/2023	32
6.	Yoga training of the officers & staff	BESCOM Office, Thalaghatapura	23/06/2023	30
7.	Yoga training of police personnel	Police station, Kaglipura	8/08/2023	35
8.	Yoga training of police personnel	Police station, Kaglipura	11/8/2023	21
9.	Yoga for elderly	Shantidhama Old age home	17/08/2023	22
10.	Yoga for elderly	Ashraya seva trust, Bengaluru	24/08/2023	34
11.	Yoga training of the officers & staff	NAL- batch 1	6/11/2023	36
12.	Yoga training of the officers & staff	NAL- batch 2	6/11/2023	35
<b>Total</b>				<b>325</b>

**3.2.4** Ten training programmes have been conducted for the students from different Ayurveda colleges of Karnataka regarding research methodology, biostatistics, chromatography techniques and comprehensive management of Diabetes mellitus which was attended by a total of 426 students under the mentorship of Dr. Sulochana Bhat.



SL. No.	Date	Title	Resource persons	College	Participants
1	03/07/2023	Research Methodology	Dr. Chandini Chandrasekharan	Government Ayurveda Medical College, Bengaluru	45
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr. Vrinda		
2	24/07/2023	Research Methodology & Biostatistics	Dr. Kavya	Atreya Ayurvedic Medical College, Hospital & Research Centre, Bengaluru	41
		Comprehensive Management of Diabetes mellitus	Dr. Chandini Chandrasekharan		
3	22/08/2023	Research Methodology	Dr. Vrinda	Ramakrishna Ayurveda Medical College, Bengaluru	47
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr. Kavya		
4	03/10/2023	Research Methodology	Dr.Chandini Chandrasekharan	Sri Sri College of Ayurvedic Science & Research, Bengaluru	43
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr.Vrinda		
5	04/11/2023	Research Methodology	Dr.Sharada Anand	Batch-1, Aadichunchanagiri Ayurvedic Medical College, Bengaluru	42
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr. Chandini Chandrasekharan		

		Management of Diabetes mellitus			
6	18/11/2023	Research Methodology	Dr.Vrinda	Batch-2, Aadichunchanagiri Ayurvedic Medical College, Bengaluru	50
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr.Sharada Anand		
7	13/12/2023	Research Methodology	Dr. Kavya N	SDM Institute of Ayurvedic & Hospital, Bengaluru	34
		Biostatistics	Ms. Anjana K S		
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr.Vrinda		
8	05/02/2024	Research Methodology	Dr. Chandini Chandrasekharan	KTG Ayurvedic medical college and hospital, Bengaluru	40
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr. Kavya N		
9	12/03/2024	Research Methodology	Dr. Kavya N	Batch-1, Sri Sri College of Ayurvedic Science & Research, Bengaluru	44
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr.Chandini Chandrasekharan		
10	13/03/2024	Research Methodology	Dr.Sharada Anand	Batch-2, Sri Sri College of Ayurvedic Science & Research, Bengaluru	40
		HPTLC	Mrs. H S Supriya		
		Comprehensive Management of Diabetes mellitus	Dr.Vrinda		
<b>Total</b>					<b>426</b>

### 3.3 Research activities

The research activities under the CoE are being carried out under following sub-heads.

**3.3.1 Drug development:** The Centre of Excellence was mandated to initiate clinical trials on the shortlisted formulations during the reporting period.

During the previous years, 567 formulations pertaining to *Prameha* were compiled from 16 Ayurveda treatises. 150 single plants indicated in *Prameha* from 16 Nighantus were also

compiled. Out of this search, four formulations having ingredients with known antidiabetic activity were short listed for pre-clinical studies. The literature search including Ayurveda texts and published research article of individual ingredients of selected 4 formulations were done.

Sl. No.	Formulation	Reference	Ingredients	Botanical source	Part used
1.	Varadi Kvatha (Kashaya kalpana)	<ul style="list-style-type: none"> <li>• Sharangadhara Samhita-Madhyama Khanda - 2/108,</li> <li>• Gada Nigraha Kayachikitsakhandanda - Pramehadhikara - 30 – 57</li> <li>• Bhaishajya Ratnavali-Pramehadhikara</li> </ul>	Hareetaki	<i>Terminalia chebula</i> Retz	Fruit
			Vibhitaki	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Fruit
			Amalaki	<i>Phyllanthus emblica</i> L.	Fruit
			Daruharidra	<i>Berberis aristata</i> DC.	Heartwood/ Bark
			Musta	<i>Cyperus rotundus</i> L.	Rhizome
			Devadaru	<i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Heartwood
2.	Mustadi Kvatha (Kashaya kalpana)	Gada nigraha-Kayachikitsakhandanda - Pramehadhikara - 30 – 90	Musta	<i>Cyperus rotundus</i> L.	Rhizome
			Indrayava	<i>Holarrhena antidysenterica</i> (Roth) Wall. ex A.DC.	Seeds
			Devadaru	<i>Cedrus deodara</i> (Roxb. ex D.Don) G.Don	Heartwood
			Hareetaki	<i>Terminalia chebula</i> Retz	Fruit
			Vibhitaki	<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Fruit
			Amalaki	<i>Phyllanthus emblica</i> L.	Fruit

On the leads collected from the literature, outcome of animal study conducted at Nagpur Veterinary College on 4 classical products and pilot studies conducted at CARI, two formulations (Varadi kwatha and Mustadi kwatha) with the following details were finalised for further clinical trial by using advanced outcome parameters such as gutmicrobiome.

These two formulations have been manufactured at Central Ayurveda Research Institute, Jhansi, in the form of Ghanavati. Standards and SoP for preparation are developed by CCRAS-CARI Jhansi. During the current year, both these formulations are taken up further for the clinical trial for bioavailability and by using advanced outcome parameters such as gutmicrobiome, screening of the patients has been initiated after obtaining IEC clearance and CTRI registration.

**3.3.2 Pre-clinical anti-diabetic studies:** Preclinical studies of four anti-diabetic formulations of Central Ayurveda Research Institute (CARI) in high fat diet along with low dose of Streptozotocin induced Diabetes in Wistar rats.

**Animal Model:** High fat diet +low dose streptozotocin induced diabetes model in 42 Wistar rats

Groups: 8 groups in total: Normal rats, Diabetic control, Diabetic control + Standard anti-diabetic drug (Metformin), Diabetic rats + Formulation 1, Diabetic rats + Formulation 2, Diabetic rats + Formulation 3, Diabetic rats + Formulation 4.

**Biochemical parameters:** Tested on 0<sup>th</sup>, 14<sup>th</sup> and 28<sup>th</sup> day

- Serum Triglyceride
- Total Cholesterol
- HDL-Cholesterol
- LDL-Cholesterol
- Serum Creatinine
- Total protein
- Alanine transaminase (ALT)
- Aspartate amino transferase (AST)
- Alkaline phosphatase (ALP)

**Histopathology:** At the end of 28<sup>th</sup> day, representative animals (two from each group) has been sacrificed and histopathology of liver, pancreas and kidney collected.

**Final results received on 18-12-2023.**

**3.3.3. Clinical Research project:** 09 research projects as detailed below

**3.3.3.1** Evaluation of anti-diabetic efficacy of four selected classical Ayurvedic poly-herbal formulations in Type-2 Diabetes Mellitus – A randomized pilot study.

- Principal Investigator – Dr. Sulochana Bhat
- Co-Investigator – Dr. Kavya N, Dr. Niveditha BM
- IEC Obtained – F.6-5/CARI/BNG/IEC Meet/2020-21/399 dt 07.06.22
- CTRI Registration - CTRI/2022/07/044018 on 14.07.22
- Date of initiation: 29.10.2022
- Month of completion: May 2023

A pilot randomized clinical trial on 24 patients of four groups. Freshly diagnosed or known diabetic subjects with HbA1c of 7-9% was included in the study. Each group was given

treatment as it is along with Varadi kwatha, Mustadi kwatha, Bhunimbadi kwatha and Khadiradi kwatha respectively for a period of 12 weeks. Follow up was done at 4, 8, 12<sup>th</sup> week.

<b>Total no of subjects screened</b>	<b>Total no of subjects enrolled</b>	<b>Total no of subjects completed</b>	<b>Total no of subjects dropped out</b>
51	24	17	07

**3.3.3.2** Clinical evaluation of anti-diabetic efficacy of ‘Kaphaja Pramehahara Yoga, an Ayurveda poly-herbal formulations in Pre-diabetes – A pilot study.

- Principal Investigator – Dr. Sulochana Bhat
- Co-Investigator – Dr. Amulya Kannan
- IEC Obtained – F.6-5/CARI/BNG/IEC Meet/2020-21/399 (C) dt 07.06.2022
- CTRI Registration – CTRI/2022/07/044484 on 29.07.2022
- Date of initiation: 11.01.2023
- Month of completion: June 2023
- Date of initiation: 11.01.2023
- Month of completion: June 2023

A pilot clinical trial on 6 patients to evaluate the clinical efficacy of Kaphaja Pramehahara Yoga mentioned in Bhavaprakasha in pre-diabetes patients for duration of 12 weeks. Newly diagnosed drug naïve pre-diabetic subjects with HbA1c of 5.7- 6.4% will be included in the study. Follow up will be done at 4, 8, 12<sup>th</sup> week.

<b>Total no of subjects screened</b>	<b>Total no of subjects enrolled</b>	<b>Total no of subjects completed</b>	<b>Total no of subjects dropped out</b>
09	06	05	01

**3.3.3.3** Development of predictive system for diagnosing the risk of Diabetes using machine learning techniques.

- Principal Investigator – Dr. Sulochana Bhat
- Co-Investigator – Dr. Kavya N, Dr. Harshvardhan Tiwari, Ms Anagha Jenu
- IEC Obtained – F.6-5/CARI/BNG/IEC Meet/2020-21/399 (A) dt 07.06.22
- CTRI Registration – CTRI/2022/07/043988 on 13-07-22

A cross-sectional study to evaluate the risk of development of Diabetes mellitus in general public and also to develop a Diabetes predictive model for early detection of Diabetes mellitus, based on machine learning techniques with a sample size of 1000 participants.

**Status** -Copyright has been obtained (SW-17879/2023) on 19.12.23

**3.3.3.4** Study title: A Cross-sectional study of Knowledge, Attitude and Practice related to Madhumeha (Diabetes)

- Principal Investigator – Dr. Sulochana Bhat
- Co-Investigator – Dr. Vrinda, Dr. Monica KP, Dr. Kavya N

- IEC Obtained – F.No.6-5/2022-CARI/BNG/ETHI.COMMI./2404 dt 09.02.23
- CTRI registration - CTRI/2023/03/050478 on 09-03-2023
- Date of initiation: 20.02.2023
- Month of completion: June 2023

Accurate facts can help people to assess their risk of diabetes, inspire them to seek proper treatment and care. With this view, a KAP survey was conducted in Central Ayurveda Research Institute alone with a target of 350 participants. However, a need to extend the survey beyond Ayurveda hospital was conceived. So it was extended to two government aided Allopathy and Ayurveda hospital present in Semi-urban/Rural and Urban region of Bangalore for a sample size of 1200 (300 in each of the four centres)

Total completed	1200
Males	621
Females	579

**3.3.3.5.** Study title: A pilot study to evaluate the role of Yoga capsule as add-on in reducing Serum Glucose levels in diabetes.

- Principal Investigator – Dr. Sulochana Bhat
- Co-Investigator – Dr. Monica KP, Dr. Chandini Chandrasekharan
- IEC Obtained – F.No.6-5/2022-CARI/BNG/ETHI.COMMI./2405 dt 09.02.23
- CTRI registration - CTRI/2022/07/044018 on 14-07-2022
- Date of initiation: 25.03.23
- Month of completion: February 2024

An open trial to validate the clinical efficacy of Yoga Capsule in reducing serum glucose levels in patients of Diabetes. The eligible participants were randomized in two groups. In group-1, the patient was made to practice yoga for 15 minutes according to Yoga Capsule twice a day as an additional intervention to the conventional treatment for 84 days on a regular basis. This was monitored in the institute's yoga hall and online platform. In group-2, the conventional treatment remained without any additional intervention. Both the groups were assessed for Diabetes Symptoms Questionnaire (DSQ) at baseline, 28 days 56 days and 84 days. Blood investigations like HbA1c, FBS, PPBS and Hemogram was validated before and after the intervention.

Total no of subjects screened	Total no of subjects enrolled	Total no of subjects completed	Total no of subjects dropped out
45	30	25	05

**3.3.3.6** Study title: Evaluation of bio-availability of Varadi and Mustadi ghana vati in healthy volunteers – A cross-over randomized clinical trial

- Principal investigator –Dr. Sulochana Bhat
- Co-investigator –Dr. Tejaswini C, Dr. Sharada Anand
- IEC obtained – F. No. 6-60/2022-23/CARI/BNG/CoE/2725 dt 22.02,2024
- CTRI registration – CTRI/2024/03/064377 on 19-03-24

The study is taken to evaluate the bio-availability of the above said drugs. Gallic acid has been used as the standard comparator. Study involves healthy human volunteers (n=12) receiving the test formulations in a cross over design. Varadi Ghana vati and Mustadi Ghana vati in the dose of 2000mg will be administered (on two different days with a washout period in between). Blood will be drawn at 7 different intervals on a single day from the volunteers. Separated plasma from the blood will be used for HPLC and HPTLC analysis to assess the bio-availability of gallic acid in the test formulations. Study will be conducted on two different days with a wash out period of a minimum of seven days.

**Status** – Screening started, two medicines are awaited from CARI Jhansi.

**3.3.3.7 Study title:** Evaluation of two ready-to-cook dietary supplements for its anti-diabetic property in patients of type-2 diabetes mellitus -A Randomized control trial

- Principal investigator – Dr. Sulochana Bhat
- Co-investigator – Dr. Shubhashree MN, Dr. Vrinda
- IEC Obtained – F.No. 6-60/2022-23/CARI/Bng/COE/2726 dt 22.02.2024
- CTRI registration – CTRI/2024/03/064207 on 15-03-24

A randomized control clinical trial to evaluate the efficacy of two ready-to-cook dietary supplement namely Yavadi soopa and Khadiradi yoga on blood glucose levels and agni. The sample size is 78 with three groups (26 in each group). Each group will be asked to retain their treatment and diet as it is. Group-1 is the control group, group 2 and group 3 will receive Yavadi soopa and Khadiradi yoga respectively as an adjuvant diet supplement. Fasting blood glucose in the range 150-200 mg/dL and/or post prandial glucose of 180-300 mg/dL will be included in the study. Study period is of 42 days with 21day interval of follow up. FBS, PPBS, Plasma Insulin, HOMA IR and other safety parameters along with DSQ (Diabetes Symptom Questionnaire) and SNAQ (Simplified nutritional appetite questionnaire) will be evaluated in this study. Its effect on Agni and acceptability of the new form will also be assessed.

**Status** – Screening started, two formulations are getting ready at CIIRC Bengaluru.

**3.3.3.8 Study title:** Safety and efficacy of Varadi ghana vati in Madhumeha/ type-2 diabetes mellitus: An open labelled randomized controlled active comparator (Metformin) Phase-II study.

- Principal investigator –Dr. Sulochana Bhat
- Co-investigator – Dr. Sharada Anand
- IEC Obtained – F.No. 6-60/2022-23/CARI/Bng/COE/2727 dt 22.02.2024
- CTRI registration – CTRI/2024/03/064184 on 15-03-24

The study is envisaged to assess the safety and anti-diabetic efficacy of classical Ayurveda poly-herbal formulations Varadi ghana vati in 120 drug naive patients of type-2 diabetes mellitus in comparison with Metformin (active comparator). The assessment parameters include glycemic parameters, drug safety and gut microbiome studies.

**Status** – Screening started, two medicines are awaited from CARI Jhansi.

### 3.3.3.9 Occurrence of diabetic peripheral neuropathy and its relationship with Prakriti among type-2 diabetic patients – A cross-sectional study.

- Principal investigator – Dr. Vidyashree Anchan
- Co-investigator – Dr. Chandini Chandrasekharan
- IEC Obtained – F. No. 6-60/2022-23/CARI/Bng/COE/2724 dt 22.02.2024
- CTRI registration – CTRI/2024/03/064317 on 18-03-24

A cross-sectional observational study will be conducted at CARI hospital among all adult known type-2 diabetic patients attending the out-patient department. After obtaining the written informed consent, a detailed medical history (disease and drug) and physical examination will be performed for eligible patients. All the enrolled patients will be subjected to a structured questionnaire, HbA1c, RBS, neurological examination, INLOW'S 60-second diabetic foot screening and Prakriti assessment. The main objective of this study is to determine the occurrence of diabetic peripheral neuropathy and its relationship with Prakriti among type-2 diabetic patients. It is also intended to determine the risk factors associated with diabetic peripheral neuropathy, classify the risk for diabetic foot ulceration and amputation among type-2 diabetic patients. The total study period will be 12 months with a sample size of 400.

**Status** –initiated, 1<sup>st</sup> patient enrolled.

### 3.3.4 Food development for diabetes

The Centre of Excellence is mandated to develop 2 ready to cook/eat food recipes for clinical trials.

Collaboration with Centre for Incubation, Innovation, Research and consultancy (CIIRC), Bengaluru has been done through MoU. Discussions were held with scientists of NIN-Hyderabad, Ayurveda experts for development of ready to eat / cook anti-diabetic food preparations, based on the extensive literature search and Ayurveda principles of *pathyaahara*. Among them, 2 preparations were finalised which include Yavadi soopa (soup powder) and Khadiradi yoga (developed in the form of ready to dissolve pellets), their quality has also been ensured. Extraction of ingredients of Khadiradi yoga was done by Himalaya Wellness Company and Yavadi soopa (soup powder) was manufactured at CIIRC for free of cost and have been taken up for clinical trial.

#### Food formulation-1 - Khadiradi yoga- dispersible pallets

Formulation	Reference	Ingredients	Botanical source	Part used	Ratio
Khadiradi yoga	Chakradatta-Prameha chikitsa - 35 - 18 / pg 216	Kadara	<i>Acacia polyantha</i> Will.	Bark	1 part
		Khadira	<i>Acacia catechu</i> (L.f.) Willd.	Heartwood	1 part
		Puga	<i>Areca catechu</i> L.	Nut	1 part
Indication: Kshoudra meha					



**Food formulation-2-Yavadi soopa (ready to mix soup powder)**

Formulation	Reference	Ingredients	Botanical source	Part used	Ratio
Yavadi soopa	Anubhoota yoga	Yava	<i>Hordeum vulgare L.</i>	Seeds	1 part
		Kulatha	<i>Macrotyloma uniflorum (Lam.) Verdc</i>	Seeds	1 part
		Mudga	<i>Vigna radiate (L.) Wilczek</i>	Seeds	1 part

**3.3.5 Technical collaborations**

- During the reporting period, MoU was signed with Government Ayurveda Research Centre, Mysore for collaboration on academic programmes, research partnerships, and training on 20-11-2023.
- The activities mentioned in the previous MoU signed with IISc Bengaluru, CSIR-Central Food Technology Research Institute Mysore, Centre for Incubation Innovation Research and Consultancy (CIIRC), Samatvam Endocrinology Diabetes Center Bengaluru are continuing.
- Our advisory panel has the experts from NIMHANS, Bengaluru, Bangalore Medical College, Karnataka Institute of Diabetology, ICMR- NIN Hyderabad, National Centre for Cell Science (NCCS) Pune and Interactive Research School for Health Affairs (IRSHA) Pune.
- We also work closely with the Panchayat, Anganwadi, near by Community Health Centre, Primary Health Centre - for outreach activities, referrals etc.
- CCRAS-CARI Jhansi is our partner in preparation of standardised medicines. Himalaya Drug Company has prepared the extracts for one of the food formulations.

**3.3.6 Scientific Publications**

Sl.No.	Title	Journal	Authors	Status
1.	Anti-diabetic formulations –A laghutrayee review	Journal of Ayurveda	1. Amulya Kannan 2. Raghavendra Naik 3. Vrinda 4. Shilpashree A T 5. Kavya N 6. Sulochana Bhat	Published

2.	Ayurvedic interventions in the management of Venous stasis dermatitis in a patient with diabetes-2: A case report	Journal of Research in Ayurvedic Sciences	1. Dr.Chandini Chandrasekharan 2. Dr.Amulya Kannan 3. Miss.Anagha Jenu 4. Dr.Sulochana Bhat	Published
3.	A literary study of Rasa Tantra Sar Va Siddha Prayog samgraha with special reference to pramehaharayogas	Journal of Ayurveda	1. Vrinda 2. Kavya N 3. Sharada Anand 4. Sulochana Bhat	Published
4.	Potential effects of Mudga (Vigna radiata L.Wilczek )as a dietetic food and medication for diabetes	Journal of Ayurveda & Integrated Medical Sciences	1. Dr. Chandini Chandrasekharan 2. Dr. Sulochana Bhat	Published
5.	Non vegetarian diet as a risk factor of type 2diabetes: A retrospective study of cross-sectional population in Bengaluru	International Journal of Ayurveda Research	1. Dr. Chandini Chandrasekharan 2. Dr. Sulochana Bhat 3. Dr. Raghavendra Naik 4. Ms. Anjana K S	Under Review and revision
6.	Knowledge, attitude and practice related to diabetes with reference to Ayurveda and yoga	Indian Journal of Community Medicine	1. Dr. Vrinda 2. Dr. Sulochana Bhat 3. Ms. Anagha Jenu 4. Dr. Kavya 5. Dr. Monica K P	Under Review and revision
7.	Ayurveda Approach for Frozen Shoulder in Diabetes- A case series.	Journal of Drug Research in Ayurvedic Science	1. Dr. Amulya Kannan 2. Dr. Chandini Chandrasekharan 3. Dr. Sulochana Bhat	Submitted

### 3.3.3.7 IEC materials

The below IEC materials have been developed and are being distributed to public at CARI Hospital, camps and other outreach programmes and the soft copies are available on the website. The videos are also available on website as well as in CARI social media platforms.

- i. Diabetic eye care charts for patients
- ii. Diabetic foot care charts for patients

- iii. Diabetic skin care charts for patients
- iv. IEC material on FAQs (Essentials of Madhumeha and its management)
- v. Flyer on Gestational Diabetes Mellitus in Kannada

### **3.4 Upgradation of the Institute**

- a. Hospital services- Ultrasound sonography machine was purchased under CoE scheme for the upgradation of the Institute.
- b. Botany section- upgradation of herbal garden.
- c. Drug Standardisation unit - Reagents and other lab consumables were purchased under CoE scheme for the conduction of analysis in HPTLC and DSRU units.
- d. Software purchased- STATA/SE 18 statistical software installed on 27.12.2023 to carry out plan the research studies and analyse the data.
- e. Maintenance of website and e health services.

4. Glimpses of activities (2023-24)



Student training programmes





**Camps around CARI for Diabetes screening consultation and free distribution of medicines**



**Participation from CoE**





**Public training programmes- awareness & Yoga**





## IEC materials



**Centre of excellence in Madhumeha (Diabetes)**  
Central Ayurveda Research Institute,  
Kanakapura road, Bengaluru

### ESSENTIALS OF MADHUMEHA (DIABETES) AND ITS MANAGEMENT

#### What is Madhumeha (Diabetes)?

Diabetes occurs when your blood glucose/ sugar level is too high. Blood glucose is the main source of energy that is derived from the food you eat. Insulin, a hormone produced by the pancreas, helps glucose from the food enter your cells which are then utilized for energy. Sometimes your body does not produce sufficient insulin or when no insulin is produced or it is not rightly used, glucose remains in the blood and does not enter the cells.

Uncontrolled diabetes eventually affects other organs like the eyes, heart, kidney, brain, nerves and causes various complications.

#### What are the different types of diabetes?

##### Type 1 diabetes

If you have type 1 diabetes, your body does not produce insulin. Your immune system attacks and destroys the cells in the pancreas that produce insulin. Children and young adults are more likely to have this, although it can appear at any age. People with type 1 diabetes are dependent on insulin for its management.

##### Type 2 diabetes

If you have type 2 diabetes, your body either does not produce enough insulin or utilizes insulin properly. This can develop at any age, even during childhood. However, this type of diabetes is most often seen in middle-aged and older people. Type 2 is the most common type of diabetes.

#### Gestational diabetes

Gestational diabetes can occur in some women when they are pregnant. For the majority of women, this type of diabetes goes away after delivery but sometimes diabetes diagnosed during this phase is the actual type 2 diabetes. However, if you've had gestational diabetes, you are more prone to develop type 2 diabetes later in life.

#### Pre diabetes

Pre diabetes is a condition where blood sugar levels are higher than normal, but not so high to be diagnosed as type 2 diabetes. 80% of pre diabetic patients do not know that they have it. Pre diabetes however puts you at increased risk of developing type 2 diabetes eventually.

#### What Causes Pre diabetes?

Insulin is a hormone produced by your pancreas which acts like a key to allow blood sugar into cells for use as energy. The cells in your body don't respond normally to insulin if you have pre-diabetes. Therefore the pancreas produces more insulin to try to make the cells to respond. Eventually pancreas gets exhausted, and blood sugar level rises, setting the stage for pre diabetes and type 2 diabetes down the line.



#### Impaired glucose tolerance and impaired fasting glycemia

Impaired glucose tolerance (IGT) and impaired fasting glycemia (IFG) are intermediate conditions that lie between normalcy and diabetes. People with IGT or IFG are at high risk to develop type 2 diabetes.

#### How to test?

- Fasting blood test
- Post prandial blood test
- HbA1c
- Random blood sugar
- Oral glucose tolerance test

TYPE	HbA1c (%)	FBS (mg/dl)	PPBS (mg/dl)	RBS (mg/dl)
Normal	≤ 5.7	≤ 99	≤ 139	N/A
Pre-diabetes	5.7 - 6.4	100 - 125	140-199	N/A
Diabetes	≥ 6.5	≥ 126	≥ 200	≥ 200
Gestational diabetes	5.45 - 5.95	OGTT (75g intake) - Fbs ≥ 126 or 2 hour - ≥ 140	Glucose	≥ 126 or 2

#### Are you at risk?

- Do you have a family history of Diabetes?
- Do you lead a sedentary lifestyle?
- Do you consume too much of milk and its products such as curd, ghee, butter etc.; sugar, jaggery, sweet foods, sweetened beverages or consume less dietary fibre,.
- Did you have diabetes during pregnancy?
- Are you overweight / obese or have central obesity?
- Do you have any addictions like smoking or alcohol?
- Do you suffer from any other health conditions like PCOS, high blood pressure, heart problems or impaired lipid metabolism?
- Do you have too much stress?

**What are the symptoms?**

(May not have any symptoms though blood glucose levels are high)

- Excess and/or frequent urination
- Excess thirst/ dry mouth
- Excess hunger
- Tiredness without much physical activity.
- Unintentional loss of weight or gain of weight
- Delayed healing of wounds
- Burning sensation or numbness/tingling sensation in extremities
- Visual disturbances
- Itchy skin or dark patches of skin
- Frequent Urinary tract infections
- Excessive sweating
- Having more infections than usual

**Diabetes facts**

- Diabetes does not spread from person to person. It is a non-communicable disease.
- Primary Diabetes once manifested is not reversible. It can only be managed.
- Consumption of sweets alone need not cause diabetes; however, too much of anything is not good for health.
- All forms of sweet items including jaggery and honey are not recommended in diabetes.
- Consumption of bitter food alone may not be enough sometimes for the management of diabetes.
- Sudden change in food habits like only millet diet or avoiding staple food is not recommended.
- Lean persons can also get diabetes.

**What are the complications?**

- Cardiovascular diseases
- Diabetic eye disease
- Diabetic kidney disease
- Nerve damage
- Ketoacidosis and ketones
- Hypoglycemia



**What are the alarming signs?**

**1. Ketoacidosis and ketones**

- Constantly feeling tired
- Dry or flushed skin
- Nausea, vomiting, or abdominal pain
- Difficulty in breathing
- Fruity odour on breath
- A hard time paying attention, or confusion
- High levels of ketones in the urine

**2. Stroke**

- Weakness or numbness on one side of the body
- Trouble talking
- Dizziness, loss of balance, or trouble walking
- Trouble seeing out of one or both eyes
- Double vision
- Severe headache

**3. Cardio-vascular diseases**

- Chest pain or discomfort, tightness, pressure
- Fullness—this might feel like indigestion or heartburn
- Discomfort in one or both the arms, back, jaw, neck, or upper abdomen
- Shortness of breath
- Sweating
- Fast or irregular heartbeat
- Coughing with pink-tinged mucus
- Swelling of the feet and ankles

**4. Renal diseases**

- Fluid retention leading to oedema
- loss of sleep
- Poor appetite

**5. Signs and symptoms of hypoglycaemia**

Blurred/impaired vision, shivering, feeling nervous or anxious, sleepy, excessive sweating, irritability or impatience, confusion, palpitations, dizziness, hunger, nausea, pallor, tingling or numbness in the lips, tongue or cheeks, headache, coordination problems, clumsiness, nightmares or crying out during episodes.

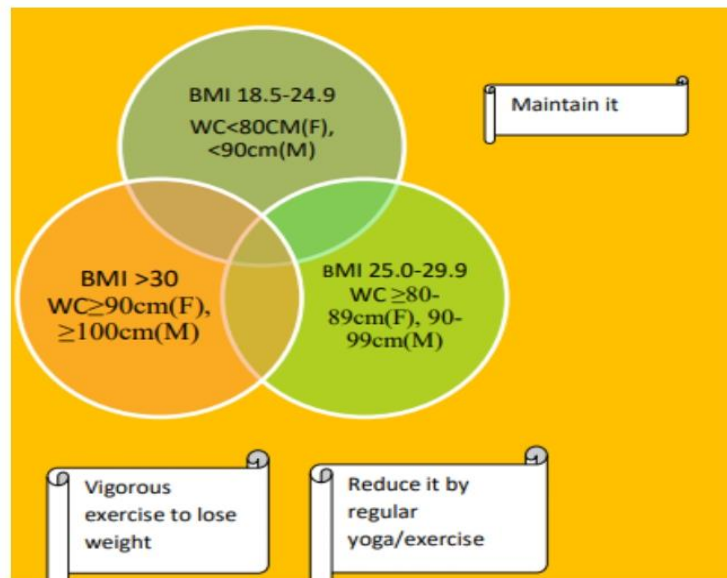
**What actions can be taken to prevent or manage diabetes?**

- Don't follow media or advertisement products without enquiring with your physician.
- Never stop regular medication without consulting your physician.
- Monitor blood glucose levels if you start a strict diet, home remedies, lifestyle change, or Yoga. Self medication of any form is strictly avoided.
- Practice Yoga under the guidance of an expert.
- One should only eat when he is hungry. Munching food in between meals should be avoided.
- Eat fresh, warm food.
- Fill half part of stomach with solid food, 1/3rd part with liquid food and the other 1/3rd parts should be left empty for the movement of doshas.
- Single type of food item should not be taken on a regular basis as it does not fulfill all the bodily requirements of nutrients.

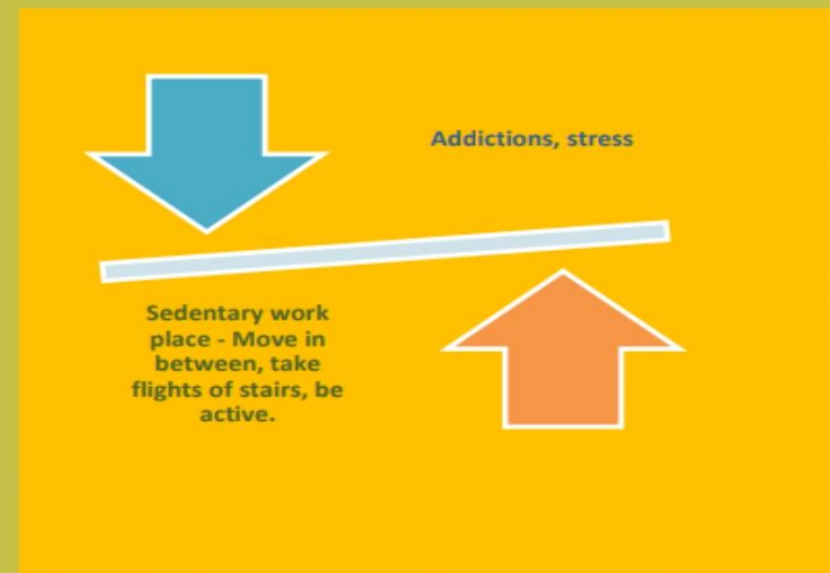


## Instructions for a diabetic person

Step 1 - Analyze your body BMI and waist circumference (WC)



Step 2 – Classify yourself in the type of work you are engaged in everyday.



## How to live with diabetes?

- **Manage your blood glucose levels and HbA1c.**
- **Maintain appropriate weight and waist circumference.**
- **Follow a proper diet and eat healthily.**
- **Be regular in taking your medications.**
- **Get regular blood checks done as advised by your physicians.**
- **Visit your physician at regular intervals.**
- **Do not follow advertisements without consulting your doctor.**
- **Take care of your foot, eyes, tooth. Prevent diabetes complications.**
- **Keep a watch on health indices like hunger, thirst, energy, sleep, urination and skin.**
- **Manage your stress levels**
- **Stay active**

## EYE CARE IN DIABETES



Keep blood sugar within a normal range.



Manage your blood pressure.



Include food items like green leafy vegetables, green gram, green peas, Guava, Gooseberry, walnut, soybeans, egg and lean fish in your diet on regular basis.



Regular physical activities



Drink 8-10 glasses of water every day.



No cigarettes. Both active and passive smoking are bad for your eyes



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.



Regular eye checkup at least once a year

Consult your doctor immediately if you watch any warning signs like

- Blurry, cloudy, or double vision
- Flashing lights or rings around lights
- Any sudden change in your vision
- Trouble seeing signs or straight lines
- Blank, dark, or floating spots in your vision
- Trouble seeing out of the corner of your eye
- Pain, pressure, or constant redness in your eyes

## SKIN CARE IN DIABETES

### Control your Diabetes



Keep blood sugar within a normal range

### Be aware



If you find a nick, a scratch, a small cut, or anything that isn't healing or worries you, consult/talk to your doctor right away.

### Prevent dry skin



Moisturize if your skin is dry and avoid scratching. The best time is right after a shower or bath, when it's still moist. Coconut oil can be applied regularly before taking bath.

### Regular bath



Take short, lukewarm showers or baths and use mild soaps and shampoos when you wash. Neem leaves can be added to bathing water.

### Dry well after bathing



Dry well by patting gently. Don't rub. Focus on underarms, groin, under breasts, and between toes.

## FOOT CARE IN DIABETES



Check the skin of your feet every day for cuts, blisters, redness, swelling, and open sores.



Wash your feet with lukewarm water/medicated water every day. Make sure to pat dry with a soft towel especially between the toes. *Triphala Kashaya* can be used for washing



Apply moisturizer on the skin to keep it smooth. Apply any oil/medicated oil in consultation with your doctor preferably before sleeping at night.



Trim your toenails straight across and file sharp edges. This helps in preventing ingrown nails and the occurrence of infection. Keeping toe nails short also protects you from accidentally scratching the sensitive skin on the feet.



Keep your foot warm and dry. The shoes/foot wear that you wear must have wide soles to allow the feet to be set flat without restrictions.



Never walk barefoot. Wear light slippers with good grip at home to prevent injuries to the feet.



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.



## Which food items are wholesome?

<p>Cereals - Barley, Jowar, wheat, old rice, red rice, millets. These can be consumed in various forms like sattu (dry powder of roasted cereals/pulses), cooked cereals, chapatti/ roti, upma, khichdi, dosa, ganji or processed liquid.</p>	
	<p>Pulses - Green gram, pigeon peas, Bengal gram, horse gram. These can be consumed in various forms like salads, rasam, sambar, khichdi.</p>
<p>Vegetables - Bitter gourd, fenugreek leaves, moringa leaves, garden nightshade leaves( kasha/ ganike soppu), Indian tinospora (Giloy), snake gourd, ivy gourd, cluster beans, raddish, bottle gourd, cucumber, ash gourd, ridge gourd, onion</p>	
	<p>Fruits – Gooseberry, Indian black berry, guava, pomegranate, wood apple, ice apple, papaya, avocado, berries</p>
<p>Himalayan pink salt, black pepper, ginger, garlic, clove, fenugreek, flax seeds</p>	
	<p>Quit alcohol and smoking</p>
<p>Limit your intake of sugarcane juice, curds, deep fried items, half baked or cooked foods, fermented or sour products, juices, sea food, red meat</p>	



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## EYE CARE IN DIABETES



Keep blood sugar within a normal range.



Manage your blood pressure.



Include food items like green leafy vegetables, green gram, green peas, Guava, Gooseberry, walnut, soybeans, egg and lean fish in your diet on regular basis.



Regular physical activities



Drink 8-10 glasses of water every day.



No cigarettes. Both active and passive smoking are bad for your eyes



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.



Regular eye checkup at least once a year

Consult your doctor immediately if you watch any warning signs like

- Blurry, cloudy, or double vision
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- Trouble seeing signs or straight lines
- Blank, dark, or floating spots in your vision
- Trouble seeing out of the corner of your eye
- Pain, pressure, or constant redness in your eyes







Centre of excellence in Madhumeha (Diabetes)



ಮಧುಮೇಹದಲ್ಲಿ ಕಣ್ಣಿನ ಆರೈಕೆ



ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆಯ ಪ್ರಮಾಣವನ್ನು ನಿಗದಿತ ಮಿತಿಯಲ್ಲಿ ಇರಿಸಿ.



ನಿಮ್ಮ ರಕ್ತದೊತ್ತಡವನ್ನು ನಿರ್ವಹಿಸಿ.



ಹಸಿರು ಎಲೆಗಳು, ತರಕಾರಿಗಳು, ಹಸಿರು ಬಟಾಣಿ, ಪೇರಲ, ನೆಲೆಕಾಯಿ, ಅಕ್ಕೋಡು, ಸೋಯಾಬೀನ್ಸ್, ಮೊಟ್ಟೆ ಮತ್ತು ಮೀನುಗಳಂತಹ ಆಹಾರ ಪದಾರ್ಥಗಳನ್ನು ನಿಯಮಿತವಾಗಿ ನಿಮ್ಮ ಆಹಾರದಲ್ಲಿ ಸೇರಿಸಿ.



ನಿಯಮಿತ ದೈಹಿಕ ವ್ಯಾಯಾಮವನ್ನು ನಿಮ್ಮ ನಿತ್ಯದ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಅಳವಡಿಸಿಕೊಳ್ಳಿ.



ಪ್ರತಿದಿನ 8-10 ಗ್ಲಾಸ್ ನೀರು ಕುಡಿಯಿರಿ.



ಸಿಗರೇಟ್ ಬೇಡ.  
ಸಕ್ರಿಯ ಮತ್ತು ನಿಷ್ಕ್ರಿಯ ಧೂಮಪಾನ ಎರಡೂ ನಿಮ್ಮ ಕಣ್ಣುಗಳಿಗೆ ಕೆಟ್ಟದು.



ಮಾನಸಿಕ ಒತ್ತಡವು ನಿಮ್ಮ ರಕ್ತದ ಸಕ್ಕರೆಯ ಪ್ರಮಾಣವನ್ನು ಮತ್ತು ರಕ್ತದೊತ್ತಡವನ್ನು ಹೆಚ್ಚಿಸಬಹುದು. ಯೋಗ ಮತ್ತು ಧ್ಯಾನವು ಮಾನಸಿಕ ಒತ್ತಡವನ್ನು ಕಡಿಮೆ ಮಾಡಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ.



ಸರಳ ನೀರು/ ತ್ರಿಫಲ ಕಷಾಯದಂತಹ ಔಷಧಿಯುಕ್ತ ನೀರಿನಿಂದ ದಿನನಿತ್ಯ ಕಣ್ಣುಗಳನ್ನು ತೊಳೆಯುವುದು, ನಿಮ್ಮ ಕಣ್ಣುಗಳನ್ನು ಸ್ವಚ್ಛವಾಗಿಡಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ ಮತ್ತು ವಿವಿಧ ಕಣ್ಣಿನ ಸೋಂಕುಗಳಿಂದ ನಿಮ್ಮನ್ನು ರಕ್ಷಿಸುತ್ತದೆ.



ವರ್ಷಕ್ಕೊಮ್ಮೆಯಾದರೂ ನಿಯಮಿತ ಕಣ್ಣಿನ ತಪಾಸಣೆ ಮಾಡಿಸಿ.

- ನೀವು ಯಾವುದೇ ಎಚ್ಚರಿಕೆ ಚಿಹ್ನೆಗಳನ್ನು ಗಮನಿಸಿದರೆ ತಕ್ಷಣ ನಿಮ್ಮ ವೈದ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಿ
- ಮಸುಕು, ಮಜ್ಜು ಅಥವಾ ಎರಡು ದೃಷ್ಟಿ
  - ಹೊಳೆಯುವ ಬೆಳಕು ಅಥವಾ ಬೆಳಕಿನ ಸುತ್ತ ವರ್ತುಲದಂತೆ ಕಾಣುತ್ತದೆ.
  - ನಿಮ್ಮ ದೃಷ್ಟಿಯಲ್ಲಿ ಖಾಲಿ, ಕಪ್ಪು ಅಥವಾ ತೇಲುವ ತಾಣಗಳು
  - ನೋವು, ಒತ್ತಡ, ಅಥವಾ ನಿಮ್ಮ ನಿಮ್ಮ ಕಣ್ಣುಗಳು ನಿರಂತರ ಕೆಂಪಾದಲ್ಲಿ
  - ಚಿಹ್ನೆಗಳು ಅಥವಾ ನೇರ ರೇಖೆಗಳನ್ನು ನೋಡುವಲ್ಲಿ ತೊಂದರೆ
  - ನಿಮ್ಮ ಕಣ್ಣಿನ ಅಂಚಿನಿಂದ ಅಥವಾ ಮೂಲೆಯಿಂದ ನೋಡುವಲ್ಲಿ ತೊಂದರೆ
  - ನಿಮ್ಮ ದೃಷ್ಟಿಯಲ್ಲಿ ಯಾವುದೇ ಇತರ ರೀತಿಯ ಬದಲಾವಣೆ





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## FOOT CARE IN DIABETES



Check the skin of your feet every day for cuts, blisters, redness, swelling, and open sores.



Wash your feet with lukewarm water/medicated water every day. Make sure to pat dry with a soft towel especially between the toes.  
Triphala Kashaya can be used for washing



Apply moisturizer on the skin to keep it smooth. Apply any oil/medicated oil in consultation with your doctor preferably before sleeping at night.



Trim your toenails straight across and file sharp edges. This helps in preventing ingrown nails and the occurrence of infection. Keeping toe nails short also protects you from accidentally scratching the sensitive skin on the feet.



Keep your foot warm and dry. The shoes/foot wear that you wear must have wide soles to allow the feet to be set flat without restrictions.



Never walk barefoot. Wear light slippers with good grip at home to prevent injuries to the feet.



In case you detect any abnormality, cover up the area to prevent bruising and consult your doctor. Neglecting foot ulcers can lead to an amputation of your toe, foot, or part of your leg.





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ಮಧುಮೇಹದಲ್ಲಿ ಪಾದದ ಆರೈಕೆ



ಕಡಿತ, ಗುಳ್ಳೆಗಳು, ಕೆಂಪು, ಊತ ಮತ್ತು ತೆರೆದ ಹುಣ್ಣುಗಳಿಗಾಗಿ ಪ್ರತಿದಿನ ನಿಮ್ಮ ಪಾದಗಳ ಚರ್ಮವನ್ನು ಪರಿಶೀಲಿಸಿ.



ಪ್ರತಿದಿನ ಉಗುರುಬೆಚ್ಚಗಿನ ನೀರು/ಜಿಷಧಿಯುಕ್ತ ನೀರಿನಿಂದ ನಿಮ್ಮ ಪಾದಗಳನ್ನು ತೊಳೆಯಿರಿ. ವಿಶೇಷವಾಗಿ ಕಾಲ್ಪೆರುಗಳ ನಡುವೆ ಮೃದುವಾದ ಟವೆಲಿಂದ ಒಣಗಿಸಿ.  
• ತ್ರಿಫಲ ಕಷಾಯವನ್ನು ತೊಳೆಯಲು ಬಳಸಬಹುದು



ಚರ್ಮವು ನಯವಾಗಿರಲು ವೈದ್ಯರ ಸಲಹೆಯ ಅನುಸಾರವಾಗಿ ವಿವಿಧ ರೀತಿಯ ಎಣ್ಣೆ/ಜಿಷಧಿ ತೈಲಗಳನ್ನು ಉಪಯೋಗಿಸಿ.



ನಿಮ್ಮ ಕಾಲ್ಪೆರುಗಳ ಉಗುರುಗಳನ್ನು ನಯವಾಗಿ ಕತ್ತರಿಸಿ ಮತ್ತು ಚೂಪಾದ ಅಂಚುಗಳನ್ನು ಹದ ಮಾಡಿ. ಇದು ಮಾಂಸಖಂಡದೊಳಗೆ ಬೆಳೆದ ಉಗುರುಗಳು ಮತ್ತು ಸೋಂಕಿನ ಸಂಭವವನ್ನು ತಡೆಯಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ. ಕಾಲ್ಪೆರುಗಳ ಉಗುರುಗಳನ್ನು ಹದವಾಗಿ ಕತ್ತರಿಸುವುದರಿಂದ ಪಾದದ ಮೇಲೆ ಆಕಸ್ಮಿಕವಾಗಿ ಸಂಭವಿಸುವ ಗಾಯಗಳನ್ನು ತಡೆಗಟ್ಟುತ್ತದೆ.



ನಿಮ್ಮ ಪಾದಗಳಲ್ಲಿ ಅತಿ ಹೆಚ್ಚು ತೇವಾಂಶವಿಲ್ಲದಂತೆ ನೋಡಿಕೊಳ್ಳಿ ನೀವು ಧರಿಸುವ ಬೂಟುಗಳು/ ಪಾದರಕ್ಷೆಗಳು ತೊಡಕುಗಳಿಲ್ಲದೆ, ಪಾದಗಳಿಗೆ ಸರಿಯಾದ ಉದ್ದಗಲವನ್ನು ಹೊಂದಿರಬೇಕು.



ಬರಿಗಾಲಿನಲ್ಲಿ ನಡೆಯಬೇಡಿ. ಮನೆಯೊಳಗೆ ಹಗುರವಾದ, ಸರಿಯಾದ ಹಿಡಿತ ಹೊಂದಿರುವ ಪಾದರಕ್ಷೆಗಳನ್ನು ಧರಿಸಿ.



ಪಾದಗಳಲ್ಲಿ ಯಾವುದೇ ರೀತಿಯ ಅಸಹಜತೆ ಕಂಡುಬಂದಲ್ಲಿ, ಮುಂದಾಗುವ ಅಪಘಾತವನ್ನು ತಡೆಗಟ್ಟಲು ಆ ಪ್ರದೇಶವನ್ನು ಮುಚ್ಚಿ ಮತ್ತು ನಿಮ್ಮ ವೈದ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಿ. ಪಾದದ ಹುಣ್ಣುಗಳನ್ನು ನಿರ್ಲಕ್ಷಿಸುವುದರಿಂದ ನಿಮ್ಮ ಕಾಲ್ಪೆರುಗಳು, ಪಾದ ಅಥವಾ ನಿಮ್ಮ ಕಾಲಿನ ಭಾಗವನ್ನು ಕತ್ತರಿಸುವ ಪ್ರಮೇಯ ಉಂಟಾಗಬಹುದು.





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**GESTATIONAL DIABETES MELLITUS**

**What is Gestational Diabetes (GDM)?**

Gestational diabetes (GDM) is a type of diabetes that presents as high blood glucose levels during pregnancy and is associated with complications to both mother and child. GDM usually appears during the second trimester and disappears after pregnancy. However, women affected and their children are at increased risk of developing Type 2 Diabetes Mellitus later in life.

**Who can get GDM?**

Pregnant women with below conditions are at high risk of developing GDM

- Elderly primi or advanced age of first pregnancy-  $\geq 35$  yrs
- Obesity prior to pregnancy- BMI  $> 30$
- Excessive gestational weight gain
- Family history of Diabetes
- Short stature (Height  $< 150$  cms)
- Hypertension during pregnancy
- History of recurrent miscarriage
- History of GDM during previous pregnancies
- History of Polycystic ovary syndrome.

**Diagnosis of GDM**

**How?** GDM is normally diagnosed during routine blood checkups done in pregnancy.

**When?** Routine blood sugar tests are usually done between 24-28 weeks of pregnancy. Blood samples are collected from the pregnant lady at 3 intervals.

**What are the complications of GDM?**

**Maternal complications:**

- During pregnancy: Risk of Abortion, Hypertension and pre-eclampsia to the mother.
- During delivery: Premature birth, failure to progress to normal labour, increased necessity of instrumental delivery or Caesarean delivery.
- After delivery: Women with GDM are at increased risk for the development of type 2 diabetes, usually 3-6 years after pregnancy. Other factors like Obesity or hormone imbalance also enhances the risk of type 2 diabetes after GDM.

**Foetal complications:**

- The baby will mostly be large for gestational age (commonly known as big baby).
- Intrauterine death and still birth
- Hypoglycemia or low sugar levels in the first few days after birth
- Increased chance of Neonatal jaundice.
- The children of women with GDM are at increased risk of obesity, glucose intolerance, and diabetes in late adolescence and young adulthood.

- Fasting blood sugar (after 8 hours of fasting):  $> 126$  mg/dL
- Oral glucose tolerance test (1 hour after consumption of 75g of glucose):  $> 180$  mg/dL
- Oral glucose tolerance test (2 hours after consumption of 75g of glucose):  $> 155$  mg/dL



**Principles of Diet in Gestational Diabetes**

- Consume nutritious balanced diet
- Disciplined, timed meals
- Avoid Heavy meals, split the food intake into frequent small meals
- Avoid food with high glycemic index such as rice,
- Consume protein rich, low-fat, high fibre diet



**Management of GDM**

- Lifestyle modifications
- Regular blood sugar monitoring
- Oral hypoglycaemic drugs and insulin if required
- Following proper diet
- Adequate exercise



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ಗರ್ಭಾವಸ್ಥೆಯ ಮಧುಮೇಹ

ಗರ್ಭಾವಸ್ಥೆಯ ಮಧುಮೇಹ (ಜಿಡಿಎಂ) ಎಂಬುದು ಒಂದು ರೀತಿಯ ಮಧುಮೇಹವಾಗಿದ್ದು, ಗರ್ಭಿಣಿಯರಲ್ಲಿ ರಕ್ತದಲ್ಲಿನ ಗ್ಲೂಕೋಸ್ ಮಟ್ಟವು ಅಧಿಕವಾಗಿ ಕಂಡುಬರುತ್ತದೆ ಹಾಗೂ ಇದರಿಂದಾಗಿ ತಾಯಿ ಮತ್ತು ಮಗುವಿನಲ್ಲಿ ಆರೋಗ್ಯದ ತೊಂದರೆಗಳು ಉಂಟಾಗಬಹುದು. ಜಿಡಿಎಂ ಸಾಮಾನ್ಯವಾಗಿ ಎರಡನೇ ತ್ರೈಮಾಸಿಕದಲ್ಲಿ ಕಾಣಿಸಿಕೊಳ್ಳುತ್ತದೆ ಮತ್ತು ಪ್ರಸವದ ನಂತರ ಕಣ್ಮರೆಯಾಗುತ್ತದೆ. ಆದಾಗ್ಯೂ, ಬಾಧಿತ ಮಹಿಳೆಯರು ಮತ್ತು ಅವರ ಮಕ್ಕಳು, ನಂತರದ ಜೀವನದಲ್ಲಿ ಮಧುಮೇಹ ತೊಂದರೆಗಳಾಗುವ ಅಪಾಯವನ್ನು ಹೊಂದಿರುತ್ತಾರೆ

ಯಾರನ್ನು ಬಾಧಿಸುತ್ತದೆ?

ಯಾವ ಗರ್ಭಿಣಿ ಮಹಿಳೆಯಲ್ಲಿ ಈ ಕೆಳಗಿನ ಅಂಶಗಳು ಕಂಡುಬರುತ್ತವೆಯೋ, ಅಂತಹವರು ಗರ್ಭಾವಸ್ಥೆಯ ಮಧುಮೇಹದಿಂದ ಬಾಧಿತರಾಗುವ ಸಾಧ್ಯತೆಗಳು ಹೆಚ್ಚು.

- ಚೊಚ್ಚಲ ಗರ್ಭಧಾರಣೆಯ ಸಮಯದಲ್ಲಿ ತಾಯಿಯ ವಯಸ್ಸು 35 ವರ್ಷಗಳಿಗಿಂತಲೂ ಹೆಚ್ಚು
- ಗರ್ಭಾವಸ್ಥೆಗೂ ಮುನ್ನ ಹೆಚ್ಚಿನ ದೇಹದ ತೂಕ, ಮತ್ತು/ಅಥವಾ ಪಾಲಿಸ್ಟಿಕ್ ಓವರಿ ಸಿಂಡ್ರೋಮ್
- ಗರ್ಭಾವಸ್ಥೆಯ ಸಮಯದಲ್ಲಿ ತೂಕ ಅಗತ್ಯಕ್ಕಿಂತಲೂ ಹೆಚ್ಚಾಗುವುದು
- ಮಧುಮೇಹದ ಕೌಟುಂಬಿಕ ಹಿನ್ನೆಲೆ
- ತಾಯಿಯ ಕಡಿಮೆ ಎತ್ತರ (ಎತ್ತರ <150 ಸೆಂ.ಮೀ )
- ಗರ್ಭಾವಸ್ಥೆಯಲ್ಲಿ ಅಧಿಕ ರಕ್ತದೊತ್ತಡ
- ಪ್ರಸಕ್ತ ಗರ್ಭಾವಸ್ಥೆಯ ಮುನ್ನ ಅನೇಕ ಬಾರಿ ಗರ್ಭಪಾತ
- ಹಿಂದಿನ ಗರ್ಭಾವಸ್ಥೆಯಲ್ಲಿ ಜಿಡಿಎಂ

ಜಿಡಿಎಂ ರೋಗನಿರ್ಣಯ

ಹೇಗೆ?

ಗರ್ಭಾವಸ್ಥೆಯಲ್ಲಿ ಸಾಮಾನ್ಯ ರಕ್ತ ತಪಾಸಣೆಯ ಸಮಯದಲ್ಲಿ ಜಿಡಿಎಂ ಅನ್ನು ಪತ್ತೆ ಮಾಡಲಾಗುತ್ತದೆ.

ಯಾವಾಗ?

ಗರ್ಭಾವಸ್ಥೆಯ 24-28 ವಾರಗಳ ನಡುವೆ ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆ ಅಂಶದ ಪರೀಕ್ಷೆಗಳನ್ನು ನಡೆಸಲಾಗುತ್ತದೆ. ಗರ್ಭಿಣಿ ಮಹಿಳೆಯಿಂದ 3 ಮಧ್ಯಂತರಗಳಲ್ಲಿ ರಕ್ತದ ಮಾದರಿಗಳನ್ನು ಸಂಗ್ರಹಿಸಲಾಗುತ್ತದೆ.

ತಾಯಿಯಲ್ಲಿ ಕಂಡುಬರುವ ತೊಂದರೆಗಳು :

ಗರ್ಭಾವಸ್ಥೆಯಲ್ಲಿ: ಗರ್ಭಪಾತದ ಅಪಾಯ, ಅಧಿಕ ರಕ್ತದೊತ್ತಡ, ಹೆರಿಗೆಯ ಸಮಯದಲ್ಲಿ ಅಕಾಲಿಕ ಜನನ, ಸಾಮಾನ್ಯ ಹೆರಿಗೆಯಲ್ಲಿ ತೊಡಕು, ಸಿಸೇರಿಯನ್ ಹೆರಿಗೆ ಮತ್ತು ಇತರ ಉಪಕರಣ ಆಧಾರಿತ ಹೆರಿಗೆಯ ಅವಶ್ಯಕತೆ. ಹೆರಿಗೆಯ ನಂತರ: ಜಿಡಿಎಂ ಹೊಂದಿರುವ ಮಹಿಳೆಯರಲ್ಲಿ ಸಾಮಾನ್ಯವಾಗಿ ಗರ್ಭಧಾರಣೆಯ ನಂತರ 3-6 ವರ್ಷಗಳ ನಂತರ ಟೈಪ್ 2 ಮಧುಮೇಹವು ಕಂಡುಬರುವ ಹೆಚ್ಚಿನ ಅಪಾಯವಿದೆ. ಅತಿ ತೂಕ ಅಥವಾ ಹಾರ್ಮೋನ್ ಅಸಮತೋಲನದಂತಹ ಇತರ ಅಂಶಗಳು ಸಹ ಜಿಡಿಎಮ್ ನಂತರ ಟೈಪ್ 2 ಮಧುಮೇಹದ ಅಪಾಯವನ್ನು ಹೆಚ್ಚಿಸುತ್ತದೆ.

ಮಗುವಿನಲ್ಲಿ ಕಂಡುಬರುವ ತೊಂದರೆಗಳು :

ಗರ್ಭಾವಸ್ಥೆಯಲ್ಲಿ ಮಗು ಅಗತ್ಯಕ್ಕಿಂತಲೂ ಹೆಚ್ಚು ತೂಕವನ್ನು ಹೊಂದಿರುತ್ತದೆ. ಗರ್ಭದಲ್ಲಿ ಮಗುವಿನ ಸಾವು ಸಂಭವಿಸುವ ಅಪಾಯ ಮಗುವಿನಲ್ಲಿ ತಾಯಿಯಿಂದ ಹೆಚ್ಚು ಇನ್ಯುಲಿನ್ ಸೇರುವ ಕಾರಣದಿಂದಾಗಿ ಜನನದ ನಂತರದ ಕೆಲವು ದಿನಗಳಲ್ಲಿ ಹೈಪೋಗ್ಲೈಸಿಮಿಯಾ ಅಥವಾ ಕಡಿಮೆ ಸಕ್ಕರೆ ಮಟ್ಟಗಳು ಕಂಡುಬರುವುದು. ನವಜಾತ ಕಾಮಾಲೆ ಕಂಡುಬರುವ ಸಾಧ್ಯತೆ ಹೆಚ್ಚು. ನವಜಾತ ಮಗುವಿನಲ್ಲಿ ತೀವ್ರ ಉಸಿರಾಟದ ತೊಂದರೆ ಕಂಡುಬರಬಹುದು. ಮಕ್ಕಳ ಹದಿಹರೆಯದ ವಯಸ್ಸಿನಲ್ಲಿ ಸ್ತೂಲತೆ, ಗ್ಲೂಕೋಸ್ ಅಸಹಿಷ್ಣುತೆ ಮತ್ತು ಮಧುಮೇಹದ ಅಪಾಯವನ್ನು ಹೊಂದಿರುತ್ತಾರೆ.

ರಕ್ತದಲ್ಲಿ ಸಕ್ಕರೆ ಅಂಶ :

- 8 ಗಂಟೆಗಳ ಉಪವಾಸದ ನಂತರ: (FBS)- > 126 mg /dl
- ಗ್ಲೂಕೋಸ್ ಸಹಿಷ್ಣುತಾ ಪರೀಕ್ಷೆ GTT:
- 75g ಗ್ಲೂಕೋಸ್ ಸೇವಿಸಿದ 1 ಗಂಟೆ ನಂತರ: > 180 mg /dl
- 75g ಗ್ಲೂಕೋಸ್ ಸೇವಿಸಿದ 2 ಗಂಟೆ ನಂತರ: > 155 mg /dl



ಗರ್ಭಾವಸ್ಥೆಯ ಮಧುಮೇಹದಲ್ಲಿ ಆಹಾರ ಕ್ರಮಗಳು

- ಪೌಷ್ಟಿಕ ಸಮತೋಲಿತ ಆಹಾರವನ್ನು ಸೇವಿಸಿ
- ಶಿಸ್ತುಬದ್ಧವಾಗಿ, ಸಮಯಕ್ಕೆ ಸರಿಯಾಗಿ ಆಹಾರವನ್ನು ಸೇವಿಸಿ
- ಒಮ್ಮೆಗೆ ಹೆಚ್ಚು ಆಹಾರವನ್ನು ಸೇವಿಸುವುದರ ಬದಲು, ಆಗಾಗ್ಗೆ ಸಣ್ಣ ಊಟಗಳಾಗಿ ವಿಭಜಿಸಿ ಸೇವಿಸಿ
- ಪ್ರೋಟೀನ್ ಯುಕ್ತ, ಕಡಿಮೆ ಕೊಬ್ಬು, ಅಧಿಕ ನಾರಿನ ಅಂಶವಿರುವ ಆಹಾರ ಸೇವಿಸಿ



ಗರ್ಭಾವಸ್ಥೆಯ ಮಧುಮೇಹದ ನಿರ್ವಹಣೆ

- ಜೀವನಶೈಲಿಯ ಮಾರ್ಪಾಡುಗಳು
- ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆಯ ಅಂಶದ ನಿಯಮಿತ ಮೇಲ್ವಿಚಾರಣೆ
- ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆಯ ಅಂಶ ಕಡಿಮೆ ಮಾಡುವ ಔಷಧಿಗಳು
- ಸರಿಯಾದ ಆಹಾರವನ್ನು ಕ್ರಮವನ್ನು ಅನುಸರಿಸುವುದು
- ಅಗತ್ಯವಿದ್ದಷ್ಟು ವ್ಯಾಯಾಮ





## Centre of excellence in Madhumeha (Diabetes)



# SKIN CARE IN DIABETES

### Control your Diabetes



Keep blood sugar within a normal range

### Be aware



If you find a nick, a scratch, a small cut, or anything that isn't healing or worries you, consult/talk to your doctor right away.

### Prevent dry skin



Moisturize if your skin is dry and avoid scratching. The best time is right after a shower or bath, when it's still moist. Coconut oil can be applied regularly before taking bath.

### Regular bath



Take short, lukewarm showers or baths and use mild soaps and shampoos when you wash. Neem leaves can be added to bathing water.

### Dry well after bathing



Dry well by patting gently. Don't rub. Focus on underarms, groin, under breasts, and between toes.



Centre of excellence in Madhumeha (Diabetes)



## ಮಧುಮೇಹದಲ್ಲಿ ಚರ್ಮದ ಆರೈಕೆ

### ನಿಮ್ಮ ಮಧುಮೇಹವನ್ನು ನಿಯಂತ್ರಿಸಿ



ರಕ್ತದಲ್ಲಿನ ಸಕ್ಕರೆಯ ಪ್ರಮಾಣವನ್ನು ನಿಗದಿತ ಮಿತಿಯಲ್ಲಿ ಇರಿಸಿ.

### ಅರಿವಿರಲಿ



1. ನೀವು ನಿಮ್ಮ ದೇಹದ ಮೇಲೆ ಯಾವುದೇ ರೀತಿಯ ವಾಸಿಯಾಗದ ಗಾಯಗಳನ್ನು ಕಂಡರೆ, ತಕ್ಷಣವೇ ವೈದ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಿ.

### ಚರ್ಮದ ಶುಷ್ಕತೆಯನ್ನು ತಡೆಗಟ್ಟಿ



ಸ್ನಿಗ್ಧ ಪದಾರ್ಥಗಳನ್ನು (ಎಣ್ಣೆ, ತುಪ್ಪ, ಮಾಯಿಸ್ಕುರ್ರಿಸರ್ ಇತ್ಯಾದಿ) ಬಳಸಿ ಚರ್ಮದ ಶುಷ್ಕತೆಯನ್ನು ನಿವಾರಿಸಿ. ಇವುಗಳನ್ನು ಬಳಸಲು ಉತ್ತಮ ಸಮಯವೆಂದರೆ ಸ್ನಾನದ ನಂತರ, ಇನ್ನೂ ತೇವಾಂಶವಿರುವಾಗ. ಸ್ನಾನ ಮಾಡುವ ಮೊದಲು ತೆಂಗಿನ ಎಣ್ಣೆಯನ್ನು ನಿಯಮಿತವಾಗಿ ಅಭ್ಯಂಗಕ್ಕಾಗಿ ಉಪಯೋಗಿಸಬಹುದು.

### ನಿತ್ಯ ಸ್ನಾನ



ಮೃದುವಾದ ಸಾಬೂನುಗಳನ್ನು ಬಳಸಿ ನಿತ್ಯವೂ ಬೆಚ್ಚಗಿನ ನೀರಿನಲ್ಲಿ ಸ್ನಾನ ಮಾಡಿ. ಸ್ನಾನ ಮಾಡುವ ನೀರಿಗೆ ಬೇವಿನ ಎಲೆಗಳನ್ನು ಸೇರಿಸಬಹುದು.

### ಸ್ನಾನದ ನಂತರ ಚೆನ್ನಾಗಿ ಒರೆಸಿ



ಶುದ್ಧವಾದ ವಸ್ತ್ರದಿಂದ ನಿಧಾನವಾಗಿ ಚರ್ಮವನ್ನು ಒರೆಸಿ ಚೆನ್ನಾಗಿ ಒಣಗಿಸಿ. ಉಜ್ಜಬೇಡಿ. ಕಂಕಳು ಮತ್ತು ತೊಡೆಯ ಸಂದಿ, ಸ್ತನಗಳ ಕೆಳಗೆ ಮತ್ತು ಕಾಲ್ಕೆರಳುಗಳ ನಡುವೆ ಗಮನಹರಿಸಿ.



ಕೇಂದ್ರೀಯ ಆಯುರ್ವೇದ ಸಂಶೋಧನಾ ಸಂಸ್ಥೆ  
केन्द्रीय आयुर्वेद अनुसंधान संस्थान  
**CENTRAL AYURVEDA RESEARCH INSTITUTE**  
CENTRAL COUNCIL FOR RESEARCH IN AYURVEDIC SCIENCES (CCRAS)  
MINISTRY OF AYUSH, GOVT. OF INDIA

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Central Ayurveda Research Institute Bengaluru is one of the peripheral Institutes of Central Council for Research in Ayurvedic Sciences functioning under Ministry of AYUSH Govt. of India, New Delhi. The Institute consists of three divisions (1) Clinical Research Unit (CRU) (2) Drug Standardization Research Unit (DSRU) and (3) Survey of Medicinal Plants Unit (SMPU). CARI is successfully providing OPD consultations, free Ayurveda medicines, basic diagnostics, Panchakarma, Yoga to the needy public in the hospital and through outreach camps in nearby areas. Several research studies related to common diseases including Covid 19 in addition to research in Botany are presently going on.

CARI hospital has both NABH and NABL certification awarded by Quality Council of India. In recognition of its contribution in patient care and research, the Ministry of AYUSH, Govt. of India has awarded "Centre of excellence (CoE) for research and clinical services in Madhumeha (Diabetes mellitus)".

Ministry of AYUSH has recognised the Institute as Peripheral Pharmacovigilance centre for monitoring and reporting adverse drug reactions and misleading advertisements related to Ayurveda medicines.

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**THANK YOU !  
PRIME MINISTER**

for  
recognizing the potential of  
Traditional Medicine and  
making it part of G20 New  
Delhi Leaders' Declaration

MESSAGE FROM CARI

श्री.ए.आर.आय. में बल्लरामंत वनला के लिए सुबह 9 बजे से दोपहर 1 बजे तक (सुटियों को छोड़कर) मुफ्त या मामूली शुल्क पर शल्य चिकित्सा प्रदान की जाती है। अस्पताल में अनुभवी आयुर्वेद चिकित्सक, आयुर्वेदिक दवाएं, प्रयोगशाला जांच, पंचकर्म और योग सुविधाएं उपलब्ध हैं। आयुर्वेद की ताकत के क्षेत्र में मुख्य रूप से जोड़ों का दर्द, मायूमिद, घोट दर्द, तंत्रिका संबंधी समस्याएं, पुराना दर्द, जठरांत्र संबंधी समस्याएं, ललाटे, महिलाओं की स्वास्थ्य समस्याएं हैं। 28 बेटों का इनपेन्डेंट सेक्शन जल्द ही खुलने वाला है। जनता द्वारा सुविधा का लाभ उठा सकता है।

UPDATES FROM CARI

- MoU between Indian Institute of Science (IISc), Bengaluru & CCRAS **News**
- Central Ayurveda Research Institute Brochure **News**
- Patients Rights and Education **News**
- Azadi Ka Amrit Mahotsav-request for public participation
- AYU Raksha Kit Brochure
- Ayush 64 Brochure
- Cross Referral Approach Ay and modern medicine

NOTIFICATION FROM CARI

- immunoassay(Hormone) analyser- CARI Bangalore.
- Tender **News**
- Invitation of Quotations for Canteen service at CARI Bangalore

VACANCIES

- change for the posts of SRF and Pharmacist at RARI Goa interview.
- Advertisement for Walk-in interview for the posts of SRF and

RESULTS

**SHRI. SARBANANDA SONOWAL**  
Hon'ble Cabinet Minister  
Ministry of Ayush, Ministry of Ports, Shipping & Waterways

**DR. MUNJPARA MAHENDRABHAI KALUBHAI**  
Hon'ble Member of State  
Ministry of Ayush, Ministry of Women & Child Development

**PROF. RABINARAYAN ACHARYA**  
Hon'ble Director General  
Central Council of Research in Ayurvedic Sciences

**DR. SULOCHANA BHAT**  
Assistant Director In-charge  
Central Ayurveda Research Institute, Bengaluru.

**Central Ayurveda Research Institute**

#12, Uttarahalli Manawarthe kaval, Uttarahalli, Hobli, Kanakapura Main Road, Valley School Road, Talaghattapura post, Bengaluru, Karnataka - 560109

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Metro: Silk Institute (1.8 km)

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75 आज़ादी का अमृत महोत्सव

केन्द्रीय आयुर्वेद अनुसंधान संस्थान  
केन्द्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद  
भारत सरकार, आयुष मंत्रालय

NABL NIELIT LABS

मुख पृष्ठ सी.ए.आर.आई. के बारे में - विभाग - चिकित्सालय - सी.ओ.ई. - फार्माकोविजिलेंस - गैलरी - ई-कन्सल्टेशन संपर्क करें

केन्द्रीय आयुर्वेद अनुसंधान संस्थान, बेंगलुरु

केन्द्रीय आयुर्वेद अनुसंधान संस्थान, बेंगलुरु केन्द्रीय अनुसंधान परिषद, आयुष मंत्रालय भारत सरकार के परिधीय संस्थानों में से एक है। संस्थान में तीन विभाग हैं (1) नेदानिक अनुसंधान इकाई (सीआरयू), (2) औषधि मानकीकरण अनुसंधान इकाई (डीएसआरयू) और (3) औषधीय पौधों का सर्वेक्षण इकाई (एसएमपीयू)। CARI अस्पताल में ज़रूरतमंद जनता को ओपीडी परामर्श, मुफ्त आयुर्वेद दवाएं, लेबोरेटरी, पंचकर्म, योग और आउटरीच शिविरों के माध्यम से सफलतापूर्वक सेवा प्रदान कर रहा है। वर्तमान में कोविड 19 सहित अनेक बीमारियों से संबंधित कई शोध अध्ययन संचालन में हैं।

CARI अस्पताल के पास NABH और NABL प्रमाणन दोनों हैं जो भारतीय गुणवत्ता परिषद द्वारा प्रदान किए गए हैं। रोगी देखभाल और अनुसंधान में इसके योगदान की मान्यता में, आयुष मंत्रालय, भारत सरकार ने "मधुमेह में अनुसंधान और नेदानिक सेवाओं के लिए उत्कृष्टता केंद्र (सीओई)" से सम्मानित किया है।

आयुष मंत्रालय ने आयुर्वेद दवाओं से संबंधित प्रतिकूल दवा प्रतिक्रियाओं और भ्रमक विज्ञानों की निगरानी और रिपोर्टिंग के लिए संस्थान को परिफेरल फार्माकोइविजिलेंस सेंटर के रूप में मान्यता दी है।

केन्द्रीय आयुर्वेद अनुसंधान संस्थान, बेंगलुरु

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सी.ए.आर.आई. से संदेश

Clinical services are provided in CARI for free of cost or nominal charge for the needy public from 9 am to 1pm (except holidays). Experienced Ayurveda physicians, Ayurvedic Medicines, laboratory investigations, Panchakarma and Yoga facilities are available in the hospital. The areas of strength of Ayurveda are mainly joint pain, diabetes, backache, neurological problems, chronic pain, gastro-intestinal problems, skin diseases, women's health problems. 28 beds inpatient section is opening soon. Public may avail this facility.

सी.ए.आर.आई. से अद्यतन

केन्द्रीय आयुर्वेद अनुसंधान संस्थान और सीएसआईआर. केन्द्रीय खाद्य प्रौद्योगिकी अनुसंधान संस्थान (सीएफटीआरआई) मैसूर के बीच समझौता ज्ञापन New!

भारतीय विज्ञान संस्थान (IISc), बेंगलुरु और CCRAS के बीच समझौता ज्ञापन New!

केन्द्रीय आयुर्वेद अनुसंधान संस्थान विवरणिका New!

रुग्णों के अधिकार और शिक्षा के बारे में संस्थान की ओर से प्रदान की जाने वाली सेवाएं New!

आज़ादी का अमृत महोत्सव- जनभागीदारी का अनुरोध आयु रक्षा किट शिबिरशिका

सी.ए.आर.आई. से अधिसूचना

सीएआरआई, बेंगलुरु संस्थान में कैटीन सेवा के लिए उद्घरण हेतु निविदा

निविदा New!

सीएआरआई, बेंगलुरु संस्थान में बाई-फर्माई लगवाने के लिए निविदा

नियुक्तियाँ

कें.आ.अ.सं. में विभिन्न पद भर्ती के लिए प्रत्यक्ष साक्षात्कार हेतु विज्ञापन।

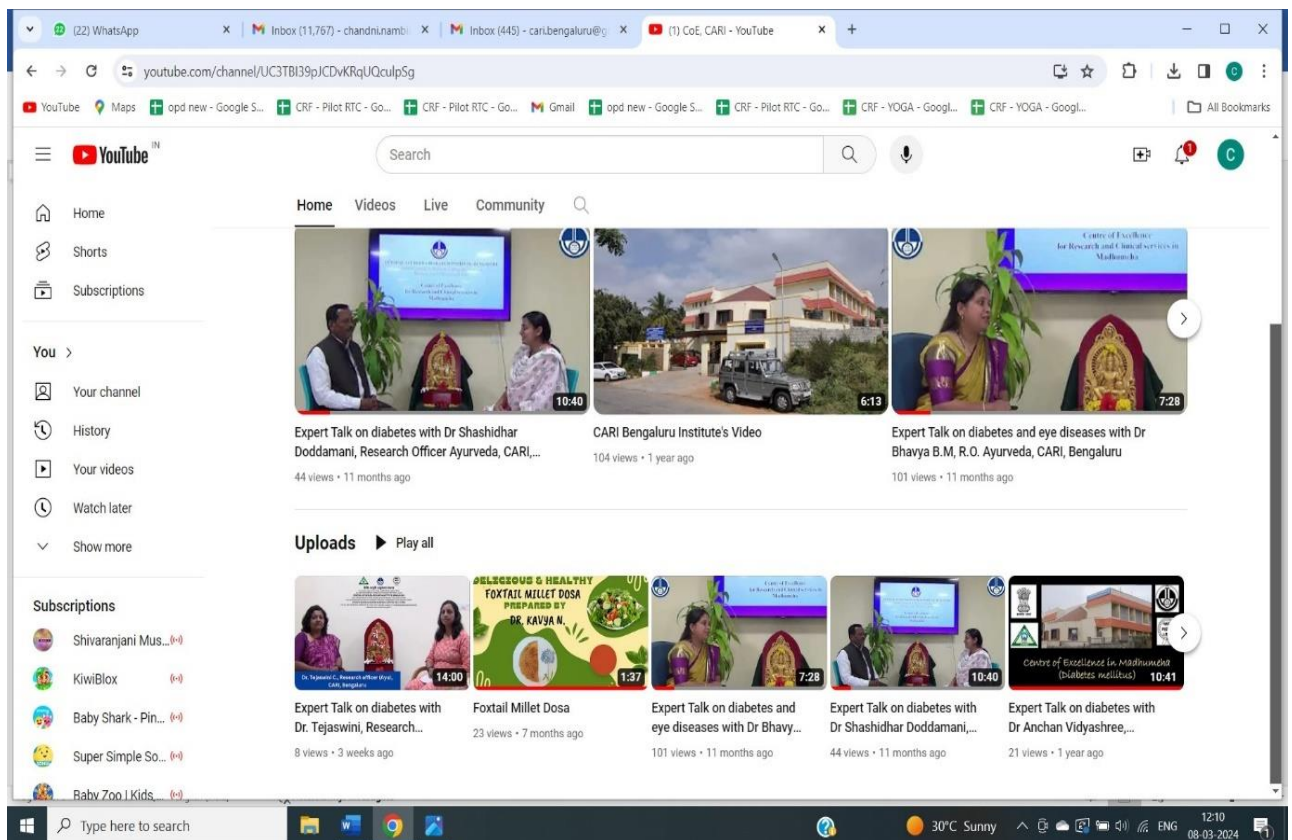
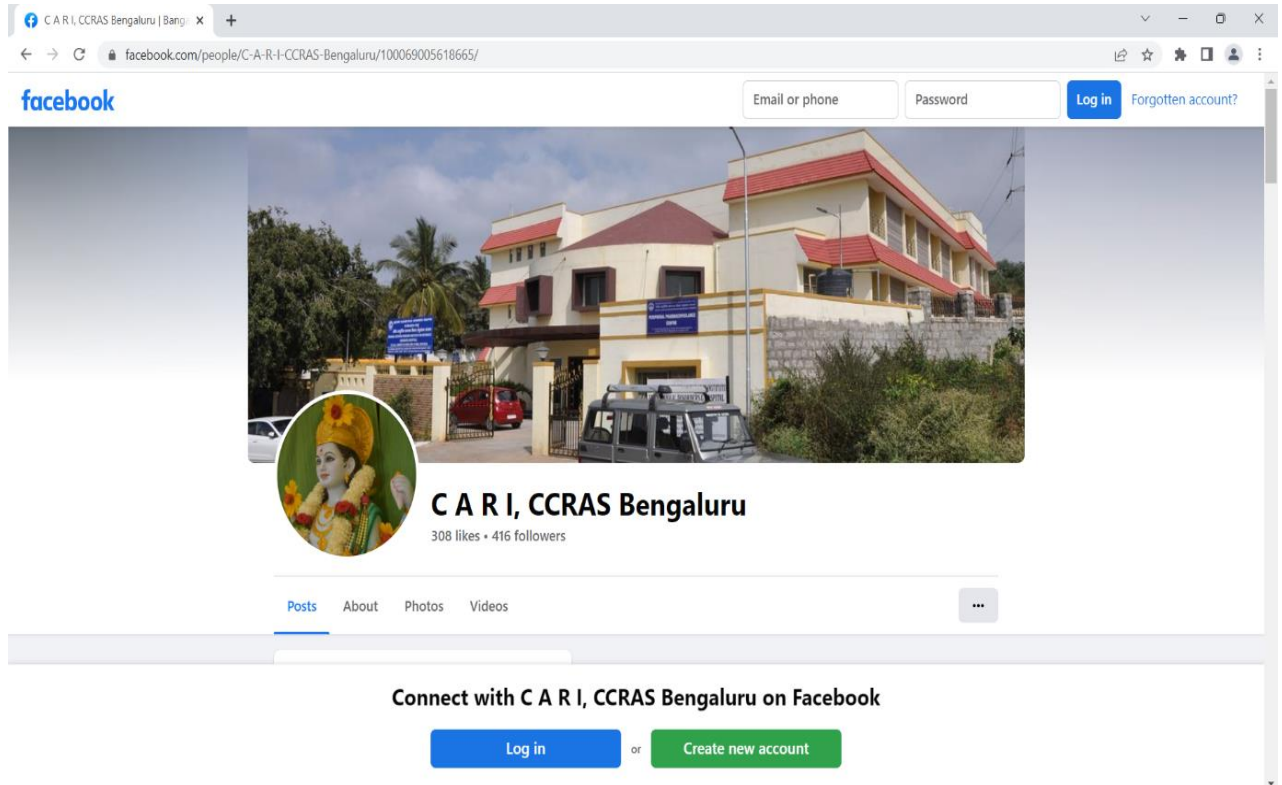
परिणाम

आरएसआरआई गावा साक्षात्कार से एसआरएफ

The screenshot shows the homepage of the Central Ayurveda Research Institute (CARI). The top section features several news articles with headlines in Hindi, such as 'भारतीय विज्ञान संस्थान (IISc), बेंगलुरु और CCRAS के बीच समझौता ज्ञापन' and 'केन्द्रीय आयुर्वेद अनुसंधान संस्थान विदेशिका'. Below the news is a dark blue banner with contact information for the Central Ayurveda Research Institute, including its address in Bengaluru, Karnataka, and contact details like phone numbers and email addresses. Social media icons for Facebook, YouTube, Twitter, and WhatsApp are visible on the left side of the banner.

The screenshot displays the 'e-Consultation Form' page on the CARI website. The page header includes the CARI logo, the name of the institute in Hindi and English, and the Ministry of Ayurveda, Government of India. The main content area features a 'Book Appointment' form with fields for 'Enter Full Name', 'Enter Your Age', 'Enter Mobile Number', and 'Enter Email Address'. Below these are 'Address Details' fields for 'Enter Area', 'Enter City', 'Enter State', and 'Enter Postal Code'. There are also dropdown menus for 'Please select Appointment Date & Slot' and 'Please select your slot here'. A text area is provided for 'Brief mention about related medical issues'. A green 'Book Appointment' button is at the bottom of the form. On the left side, there is a promotional banner for 'Book Your Time Slot Now' with the text 'TIME OPEN Monday-Saturday 2.00 PM to 4.30 PM' and '2nd Saturday, Sunday & Govt. Holidays'. A call-to-action number 'Call Us : 080-29635035 (Hosp.)' is also present.







## Publications

## Review Article

***Pramehahara Yoga (Anti-diabetic formulations) – A Laghutrayi review***

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**Abstract**

**Background:** Diabetes is a major non-communicable disease reaching epidemic proportions. In spite of vigorous development in modern medical science and technology, management of diabetes has remained inadequate. *Ayurveda* with vast documentation of treatment in management of *Prameha* may hold the key to this problem.

**Aim:** This review is expected to enrich the documentary evidences about classical references on formulations related to *Prameha* (Diabetes mellitus) enumerated in *Laghutrayi*.

**Methodology:** *Laghutrayi* texts are considered as one among the best *Ayurveda* treatises for understanding treatment principles of any disease. A total of 117 *Pramehahara* (anti-diabetic) formulations have been compiled from *Laghutrayi* by searching specific keywords from individual text's hardcopy. Key words searched in *phalashruti* (verse with indications) included "prameha", "meha", "madhumeha" with suffixes like "hanti", "harati", "jayati", "jit", "nihanti", "nashayet", "nivrittaye", "ghna".

**Results:** A total of 117 *Pramehahara Yoga* (anti-diabetic formulations) have been compiled from *Laghutrayi*. *Kvatha* (decoction) is the highest enumerated dosage form (55 formulations) in *Laghutrayi*. Honey is the most enumerated adjuvant in *Laghutrayi* (62 formulations). *Triphala* is the highest enumerated herbal formulation in *Laghutrayi* (18 formulations), followed by *Daruharidra* (12 formulations).

**Conclusion:** Validating these comprehensive observations of *Pramehahara yoga* (anti-diabetic formulations) mentioned in *Laghutrayi* may facilitate a better and precise treatment protocol in management of Diabetes mellitus.

**Keywords:** *Ayurveda*, *Prameha*, Diabetes mellitus, Antidiabetic formulations, *Laghutrayi*

**How to Cite This Article**

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**Introduction**

The term metabolic disorder is an umbrella term encompassing different types of disorders and diseases occurring due to disturbed metabolism. Cardiovascular diseases stand at the top of the list of non-communicable diseases followed by Diabetes in the second place. <sup>1</sup>

According to 10<sup>th</sup> edition of Diabetes atlas published by International Diabetic federation in 2021, it is estimated that 537 million adults between age group 20-79 years have diabetes worldwide. The second largest numbers of diabetes patients from age 20-79 years are in India (74.2

million). <sup>2</sup>

*Sangraha kala* was golden period for *Ayurveda* science's redactions and modifications in textual content. Ancient authors of *Ayurveda* could expound on all 8 branches of *Ayurveda* in their works. It must have felt humongous, hence authors in *sangraha kala* focused on few particular area of subject and explained them in detail. Gupta rule and establishment of Nalanda University became a primordial reason for science to flourish, thus marking Gupta rule as *sangraha kala*. <sup>3</sup>

Among these works, three works were more appreciated



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# आयुर्वेदीय विज्ञान अनुसंधान पत्रिका

केंद्रीय आयुर्वेदीय विज्ञान अनुसंधान परिषद् (सीसीआरएस)

आयुष मंत्रालय, भारत सरकार का आधिकारिक प्रकाशन

# Journal of Research in Ayurvedic Sciences

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Ministry of Ayush, Government of India

## Case Report

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<https://www.jrasccras.com/>

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10.4103/jras.jras\_12\_23

## Effect of Ayurveda interventions in the management of venous stasis dermatitis in a patient with type 2 diabetes: A case report

Chandini Chandrasekharan, Sulochana Bhat, Amulya Kannan, Anagha Jenu

### Abstract

**BACKGROUND:** Venous insufficiency disorder associated with diabetes is a concerning condition. It can result in venous stasis dermatitis, also known as stasis eczema, characterized by inflammatory changes in the lower extremities. A similar condition is described in Ayurveda as *Vatarakta*, which can present as *Kushtasamakshanas* (early symptoms resembling skin disorders) in the lower limbs due to vitiated *Vata* (bodily humor) and *Rakta Dhatu* (blood tissue). Ayurvedic intervention promises successful results through both *Shodhana* (detoxification) and *Shamana* (pacifying/palliative) treatment along the line of management in *Vatarakta* disease. Managing such problems in diabetes patients must be well-planned to prevent rising blood sugar levels. Therefore, venous stasis dermatitis in diabetic individuals can be effectively treated with *Shamana* (pacifying therapy) combined with *Sadyovirechana* (therapeutic purgation without prior administration of medicinal oil/ghee).

**PATIENT INFORMATION:** A 54-year-old woman with type 2 diabetes mellitus approached for the Ayurvedic management of inflammatory changes on her right lower leg. She complained of hyperpigmentation, swelling, aching pain, dryness, and severe itching of the right lower leg along the medial aspect of the ankle and foot for 6 months.

**DIAGNOSIS:** According to CEAP (clinical, etiological, anatomical, and pathophysiological) classification, this clinical condition was identified as venous stasis dermatitis with  $C_{4a}$ ,  $E_p$ ,  $A_p$ ,  $P_o$  (changes in skin and subcutaneous tissues in the form of pigmentation/eczema, primary, perforating veins, obstruction, respectively). Before beginning Ayurvedic treatment, an assessment using the revised venous clinical severity score (RVCSS) revealed a score of 7.

**INTERVENTIONS:** *Vatashaamaka-Raktadushthihara* treatment (therapy that pacifies vitiated bodily humor and purifies vitiated blood tissue) was provided to the patient for 60 days which included *Deepana-Pachana* (digestive and metabolism-enhancing therapy) followed by *Sadyovirechana* (therapeutic purgation without prior administration of medicated oil/ghee) using *Nimbamritadi Eranda Tailam* and *Samana* Treatment (pacifying therapy) including local application of *Nalparadi Kera Tailam*.

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## A Literary Study of Rasa Tantra Sar Va Siddha Prayog Samgraha with Special Reference to Pramehahara Yogas

### Abstract

**Objective:** To critically review all formulations indicated for different types of *Prameha* with the objective of understanding the drug action and focusing on new drugs which could be more beneficial against diabetes. **Data Source:** Two volumes of preprinted versions of RTSVSPS, internet sources, and catalogs of various pharmaceutical companies were scrutinized. **Review Methods:** All the formulations of *Pramehahara Yogas* were compiled and classified as herbal-, herbo-mineral-, and mineral-based medicine. Related published works on DM were noted and all formulations were analyzed in various aspects such as type of ingredients used, research works, market available formulations, and commonly used *Rasa dravya*. **Results:** RTSVSPS treatise contains 1307 formulations out of which 104 medicines were indicated for diabetes. Fifteen compound drugs have published research work and only 62% are available in the market. *Lauha bhasma* is the most extensively used *Rasa dravya*. **Conclusion:** This article throws light on various unfathomed formulations and highlights appropriate usage of compounds with different *anupanas* (vehicles) according to different conditions.

**Keywords:** Diabetes, Madhumeha, Prameha, Pramehahara yogas, Rasoushadhis

### Introduction

Ayurveda is one of the oldest of the traditional systems of medicines accepted globally. It has a better approach to treat chronic illnesses and lifestyle-related disorders as it focuses on personalized treatment, diet plan, and lifestyle modifications.

Different formulations and *Chikitsa sootra* (approach to cure or manage the disorder) have been mentioned in Vedic books which are very difficult to interpret. With this practical obstacle hindering the treatment of human beings, many *Acharyas* such as Atreya, Bharadwaja, Parashara, and Sushruta wrote treatises in a more simplified way for easy understanding. Eventually, scholars such as Vagbhata, Vrinda, M... Chelamoni, and Shomeadhas...

therapeutic purposes. Henceforth, books combining *Dhamwantareya* and *Rasa sampradaya* came into existence based on the author's knowledge and experience to serve mankind and also to preserve and flourish Ayurvedic science for future generations.

One such treatise is *Rasa Tantra Sar Va Siddha Prayog Samgraha* (RTSVSPS) which consists of two volumes. It is archived or composed by Swami Shri Krisnaananda Ji Maharaj (03/07/1889-30/12/1974). It is published by Krishna Gopal Ayurved Bhawan, Ajmer.

*Prameha* is a disease known to the medical world since time immemorial.<sup>[1]</sup> The description available in Atharvaveda is considered the first ever on this topic

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## Potential effects of *Mudga* (*Vigna radiata* L. Wilczek) as a dietetic food and medication for diabetes

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### ABSTRACT

The green gram (*Vigna radiata* L. Wilczek), also known as *Mudga* in Sanskrit, is regarded by Ayurvedic science as the best pulse and one of the healthiest foods that may be regularly consumed to maintain health. Diabetes is a chronic lifestyle condition that may be controlled with diet, exercise, and contemporary medications like insulin and oral hypoglycaemic medicines. In Ayurvedic medicine, green grams are advised as both a dietetic food and a medication for diabetes. The phytochemistry of *Vigna radiata*, or mung beans, demonstrates its antidiabetic qualities, and a number of research using green gramme extracts have validated the capacity of mung bean to control insulin resistance and reduce blood glucose levels.

**Key words:** Antidiabetic activity, Diabetes, *Mudga*, Mung bean

### INTRODUCTION

The third most significant pulse crop in India is green gram, (*Vigna radiata* L. Wilczek), which is highly prized as a grain legume. It is also referred to as Mung bean in English. Mung bean is a highly digestible, low-fat, high-

*radiata* var. *sublobata*, a closely related species. It was discovered in the 4500-year-old Harappan culture, in evidence from 3500-year-old Karnataka, and in a portion of 1600-year-old Madhya Pradesh.<sup>[2]</sup> Green gram, in Sanskrit, is called *Mudga*. One of the first pulses that humans are aware of is the *Mudga*, which