



SALINITY and HEALTH in COASTAL KACHCHH and SAURASHTRA, GUJARAT

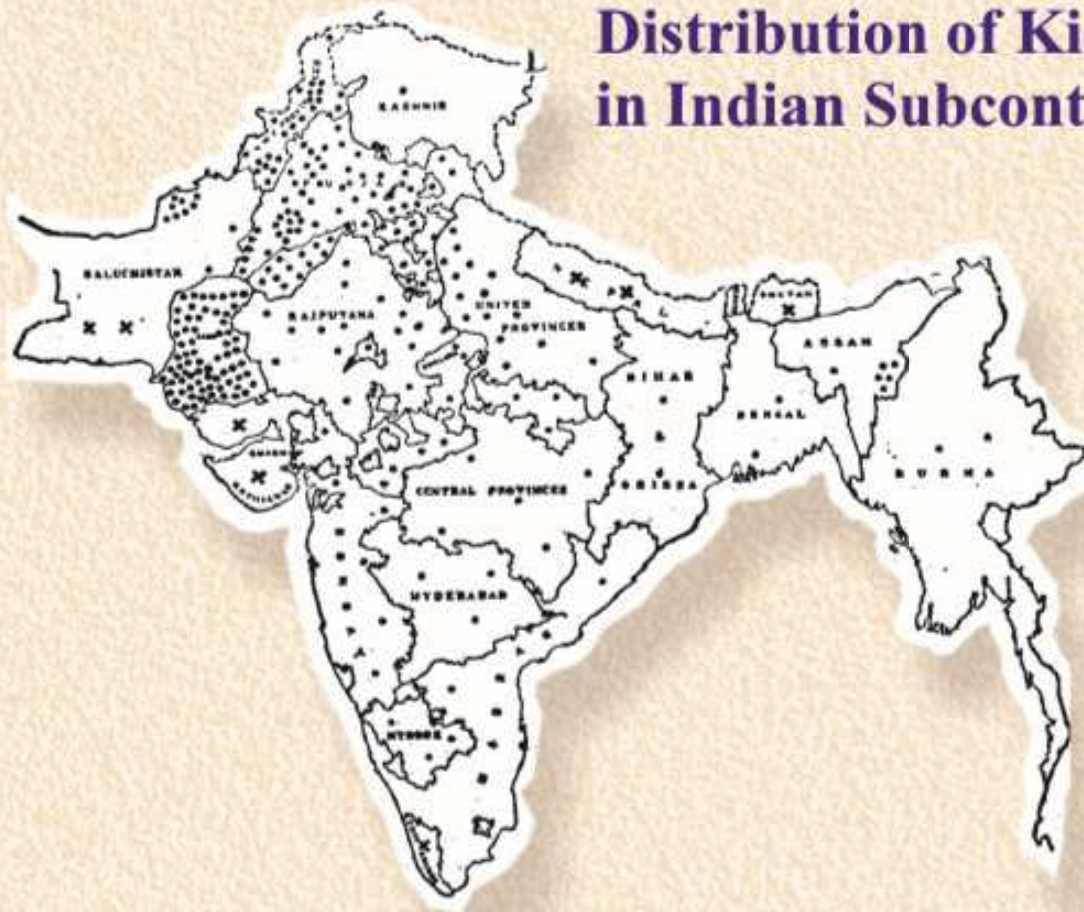
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INREM Foundation, Anand

with financial support from Coastal Salinity Prevention Cell (CSPC), Ahmedabad



Distribution of Kidney Stone in Indian Subcontinent



Each dot represents one stone removed at operation per 100,000 of population. Total number of cases, 16,384. X = No returns.

Salinity related ailments

- Mixing of sea water: Chloride – causes intestinal ulcers etc – *not fully proven*
- High Sodium – Hypertension – *not perfectly proven*

Ref. Dr. Robert McCarrison, 1931

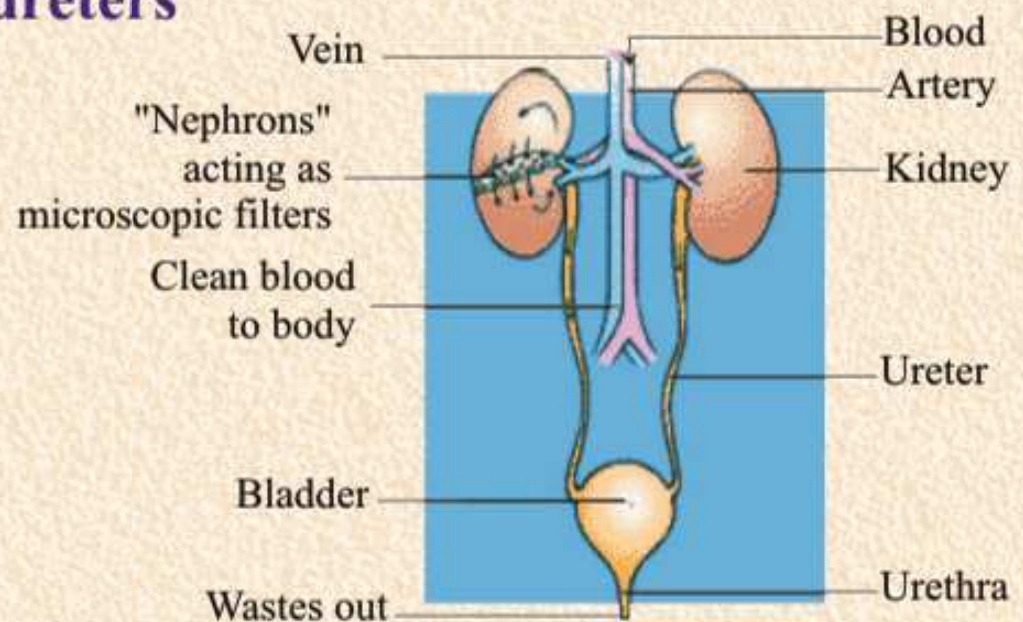
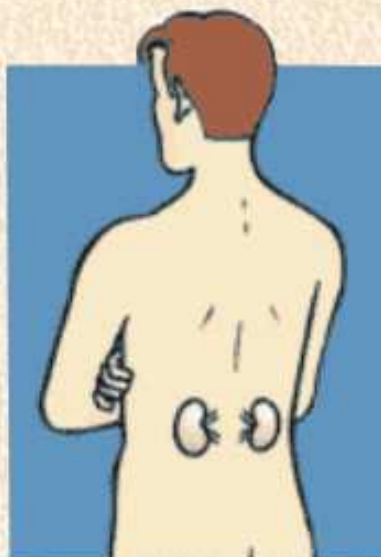
- High Salinity – High Calcium with High TDS — kidney stone, Skin Diseases – *mixed reasons*

What are Kidneys?

The kidneys are bean-shaped organs about the size of a fist – Minimum 9 cm in size.

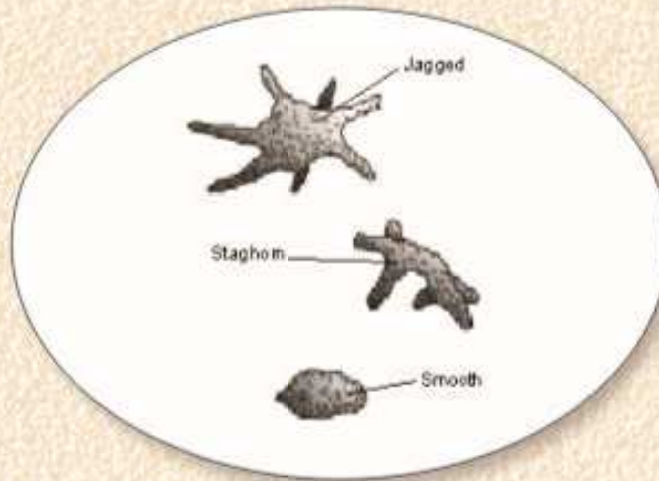
They are located at the bottom of the rib cage at the back of the body

Kidneys with nephrons and ureters





Courtesy: Dr Shyam Sonaiya, Junagadh



Kidney Stones

What is kidney stone?

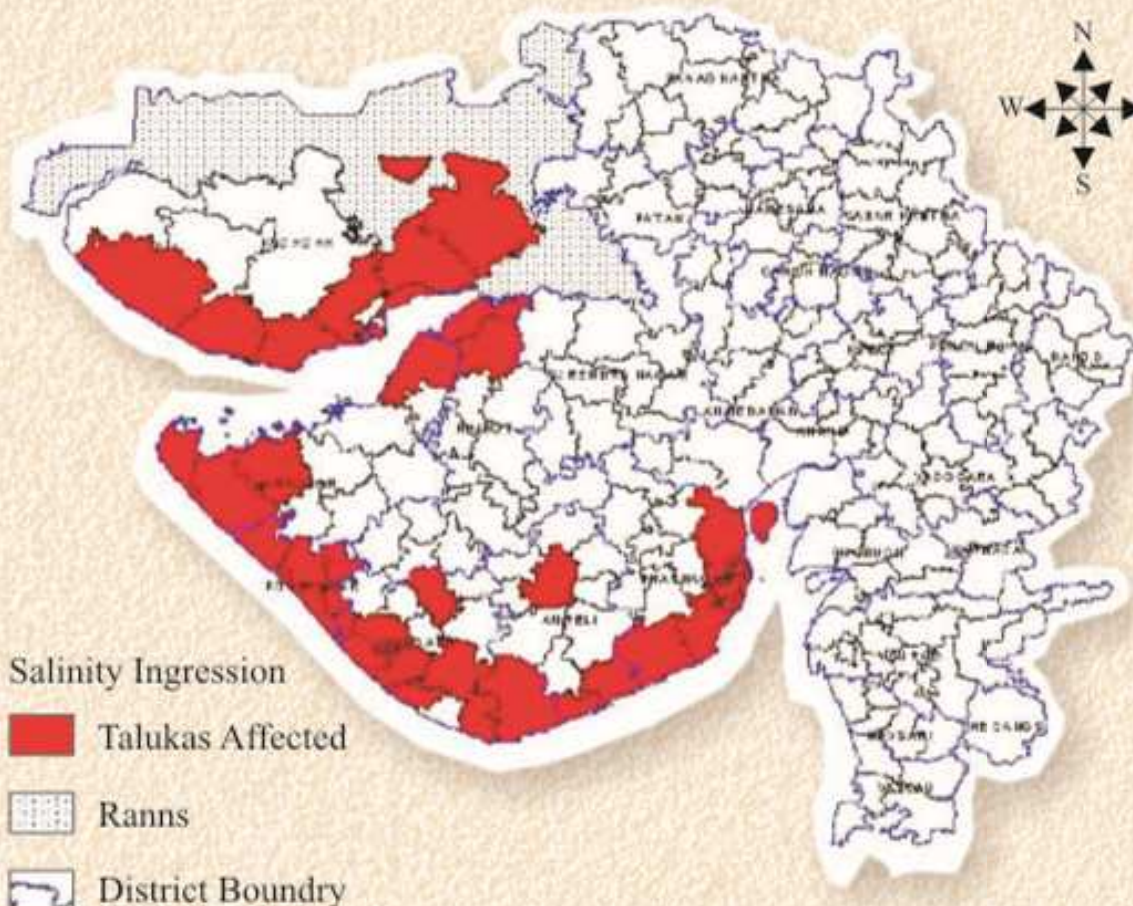
A kidney stone is a small hard mass made from deposits chiefly of oxalates and phosphates mixed with calcium, magnesium and sodium etc.

Primary Symptoms of Kidney Stones

1. Pain from loin to groin 2. Burning sensation while passing urine 3. Passing blood in urine 4. Urination stops midstream due to pain 5. Sand like granules pass with urine.

Urologists say – Combination of symptoms 1 and 5 lead to probable presence of kidney stone - Better to confirm by physician

Saline intrusion in Kachchh and Saurashtra



Salinity Ingression
 ■ Talukas Affected
 ▨ Ranns
 — District Boundry

Scale Environmental Action Programme (SEAP)
 Gujarat Ecology Commission Vadodara

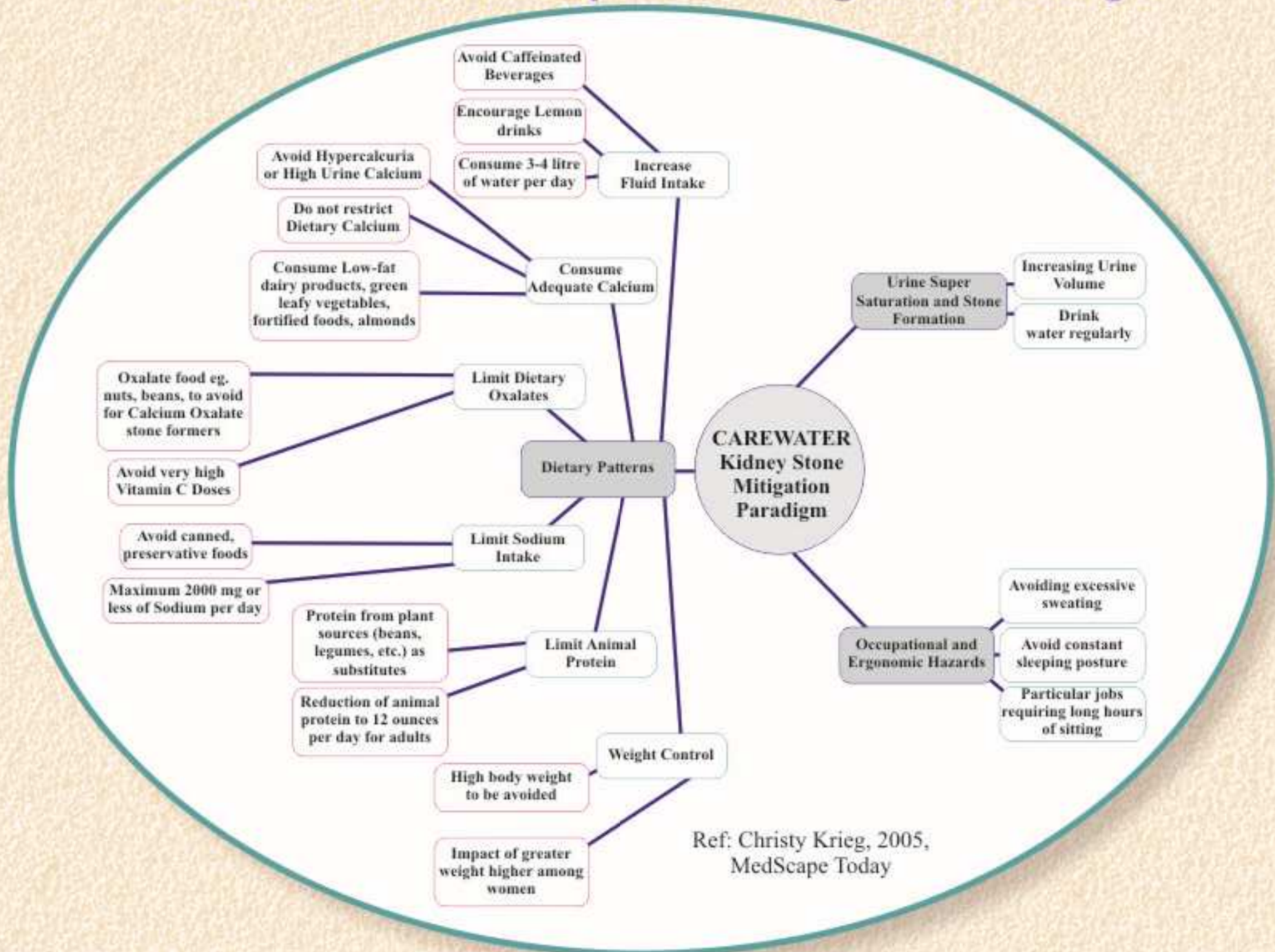
- 1,125 kms of coastline is plagued by sea water intrusion on the coastline.
- Sea water intrusion is increasing at the rate of $\frac{1}{2}$ a km. every year.
- Affected area increase by 550 sq. km. every year.
- 85% of population rely on water dependent livelihoods.
- 1500 villages are affected.
- Intrusion causes salinity ingress in coastal areas of Saurashtra, Kachchh and Gulf of Khambhat.

• Villages affected:1500

• Area: 1,33,524 ha

• Population: 75,37,129

CAREWATER Kidney Stone Mitigation Paradigm



Different Skin Diseases found in Kachchh and Maliya



Excess salinity aggravates many skin diseases - Scabies, Eczema, Fungal patches, Psoriasis etc; it can also cause hair loss and hypertension. People working in salt-pans sometimes lose sense in the skin of their palms and feet.

Comparing Salinity-Health Problems in Four Regions of Kachchh and Saurashtra

	Kachchh	Rajkot, Jamnagar, Porbandar	Junagadh	Bhavnagar, Amareli
Overall Causes	Low water consumption, high solar radiation - high sweating, low urine volume, High oxalate consumption, High Sodium consumption			
Any area specific causes	Very high solar radiation; Clear high incidence along coast	Coastal Maliya saltpan workers are directly exposed to salt	Maybe very high Calcium from water aggravates	Coastal areas show very high incidences and flow of patients to Mahuva
Renal Stones Health Facility	Alternative Medicines (Dhrab), Kidney stone camps at Bhojay, Bachau	Rajkot is the main centre. Also Jamnagar GG Hospital	Many clinics in Junagadh	Mahuva Sadbhavana Hospital and Hanumant Hospital
Costs of Treatment	Rs 500-1000 (herbal medicines for small stones < 6 mm)	Standard surgical procedure: approx Rs 5000	Standard surgical procedure: approx Rs 5000	Subsidized at Sadbhavana for Rs 3000 approx.
Incidences	1.5%-4.5%	Not Available	2%-4%	Not Available
Remarks	Not much higher specialty for any health problems	Rajkot is major centre for Kachchh as well as western Saurashtra	Very high incidences at Mangrol	Better health facilities and regional centre for treatment

Salinity Health Mitigation Centre and its Componets



A Salinity-Health Mitigation Programme needs strong linkages at the level of a Gram Panchayat, between the water supply and health services in order to establish a smooth interface that identifies upcoming local problems and tackles them from all fronts. A specific example of this is the

concept of a “Salinity Health Mitigation Centre” under the aegis and possibly as a sub-committee of a Gram Panchayat. To activate such a centre, one needs the involvement of civil society groups and NGOs playing an active role in collection of local data, training of Gram Panchayats and creating locally relevant programs to address Water-health issues. For such a programme, the critical element would be capacity building of the resource NGOs towards tackling these issues. Different components of such a programme will be (a) Research for problems identification and solutions, (b) Training for capacity building and institutions building, (c) Communication program for disseminating concepts, (d) Providing Health services for Diagnosis and Preventive/Mitigation options, (e) Developing locally relevant technologies for addressing the problems.

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We at INREM Foundation conduct multi-disciplinary research on emerging issues of water management and water policy. Such research is based on science-based methodologies and incorporating the wisdom of tested practices.

Evolve a process of research linked with ongoing implementation and initiate a continuous feedback between knowledge and action. We believe that research on improving current solutions needs long term engagement and only a dynamic interaction between action and research can lead to effective solutions in the long run.

We encourage and enable a process of sharing of knowledge and carry out dissemination of information to decision-makers, students and public.

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