DEP302

Systems Design Project

Guided by:

Prof. Ravi Poovaiah, Prof. Pramod Khambete, Dr. Ajanta Sen

WEEK 2

Team:

C Jeremiah Iype
Ishaan Nejeeb
Mohak Gulati
Prafulla Chandra G S

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Systems Design Project

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Project Overview

The aim of this Systems Design Project is to research, understand, visualize, synthesize and design for problems from socio, economic, cultural, political, technology, sustainability perspectives that are complex, uncertain, interconnected and form a system within defined boundaries. With that brief in mind we started looking at different areas based on our collective interests, knowledge and possibilities of interventions. Last presentation we took you through some of our secondary research and how we used it to set the project scope to the Indian Medicinal System.

Recap

Brainstorming
We started the previous week with an extensive amount of secondary research while simultaneously collecting and adding insights from that research to do an initial map of all various entities and forces in play within the Indian Healthcare System.

Identifying System Boundaries
We consolidated the insights from our research and brainstorming to identify the following major factors:

- Medical Research
- Production
- Distribution
- Regulation
- Prescription
- Transparency & Understanding
- Usage
- Tracking

Setting Project Scope
From the 8 aspects identified, we then focused on the consumer side of this system, into things like Prescription, Distribution, Transparency, Usage and Tracking, which can be further generalized into 4 categories:

- **Prescription**
- **Procurement**
- **Usage**
- **Institutional Policies, Regulations and Initiatives**

Identifying System Components

Within these 4 areas, we identified some important components to focus on and represent properly in our system mappings:

1. **Prescription**
    - Pharmaceutical Influence on Medical Prof.
    - Patient Education
    - Medical Malpractice
    - Generic medicines
    - Brand substitution

2. **Procurement**
    - Medicine Production in India
    - Urban and Rural Accessibility
    - Health Expenditure
    - Investments and Exports
    - Medical Research and Innovation
    - AYUSH Medicine

3. **Usage**
    - Consumer Awareness
    - Over-the-counter Medicines in India
    - Self-Medication
    - Medication Errors

- Medicine dispensation

4. **Policies, regulations & Initiatives**
    - Medicine Tracking
    - Drug Pricing
    - Drug Schedule
    - Pharma Rep Behaviour
    - Drug Authenticity
    - Essential Medicines

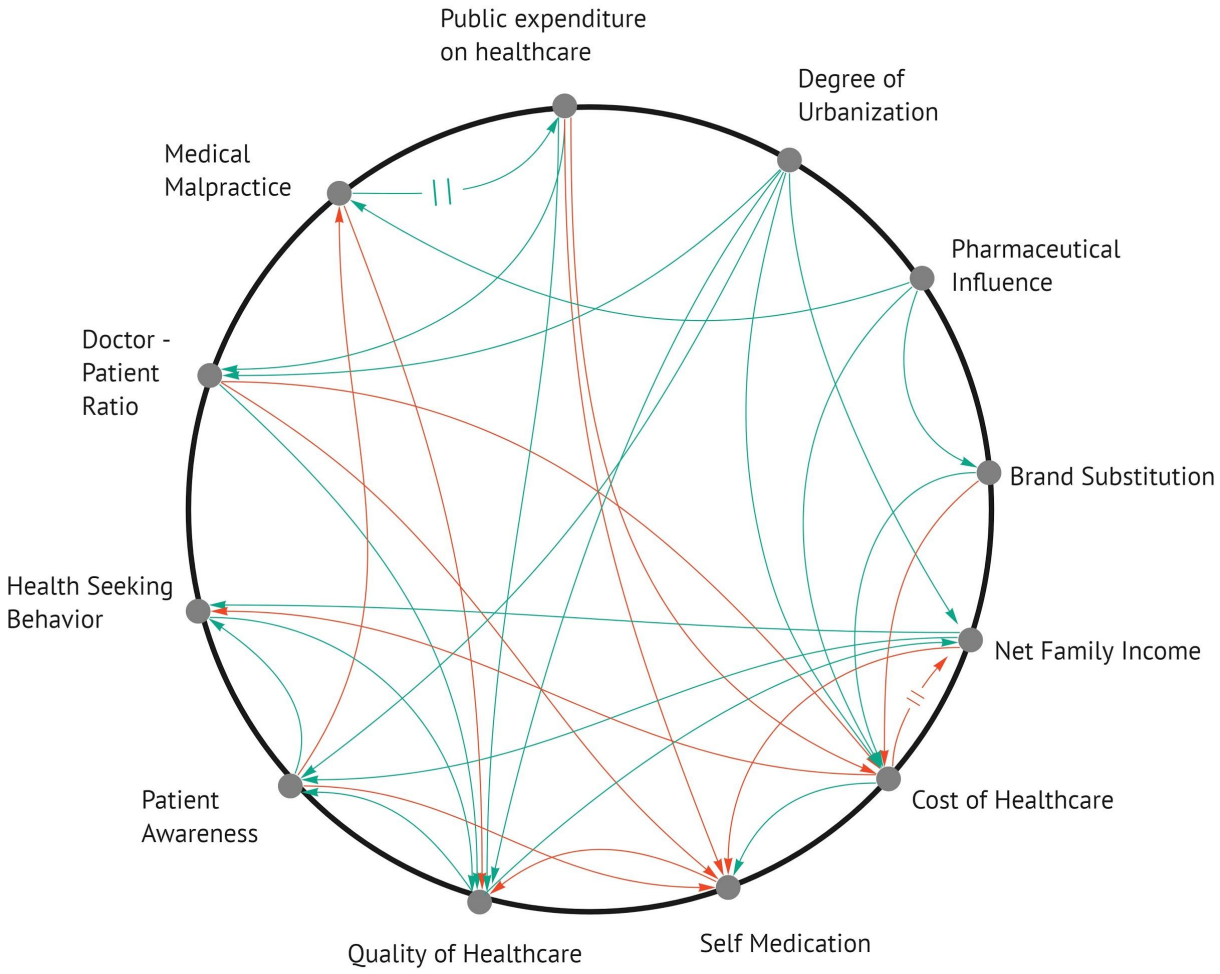
Identifying Subsystems

To get a better understanding of these 3 focus areas or subsystems (Policies, Regulations and Initiatives are present in all 3), they were mapped onto Connection Circles.

All the quantitative variables of the system are placed on the boundary and connected with lines pointing from causes to effects. The green lines show a direct relationship while the red lines show an inverse relationship. System delays were also accounted for in the connections.

The Prescription Subsystem

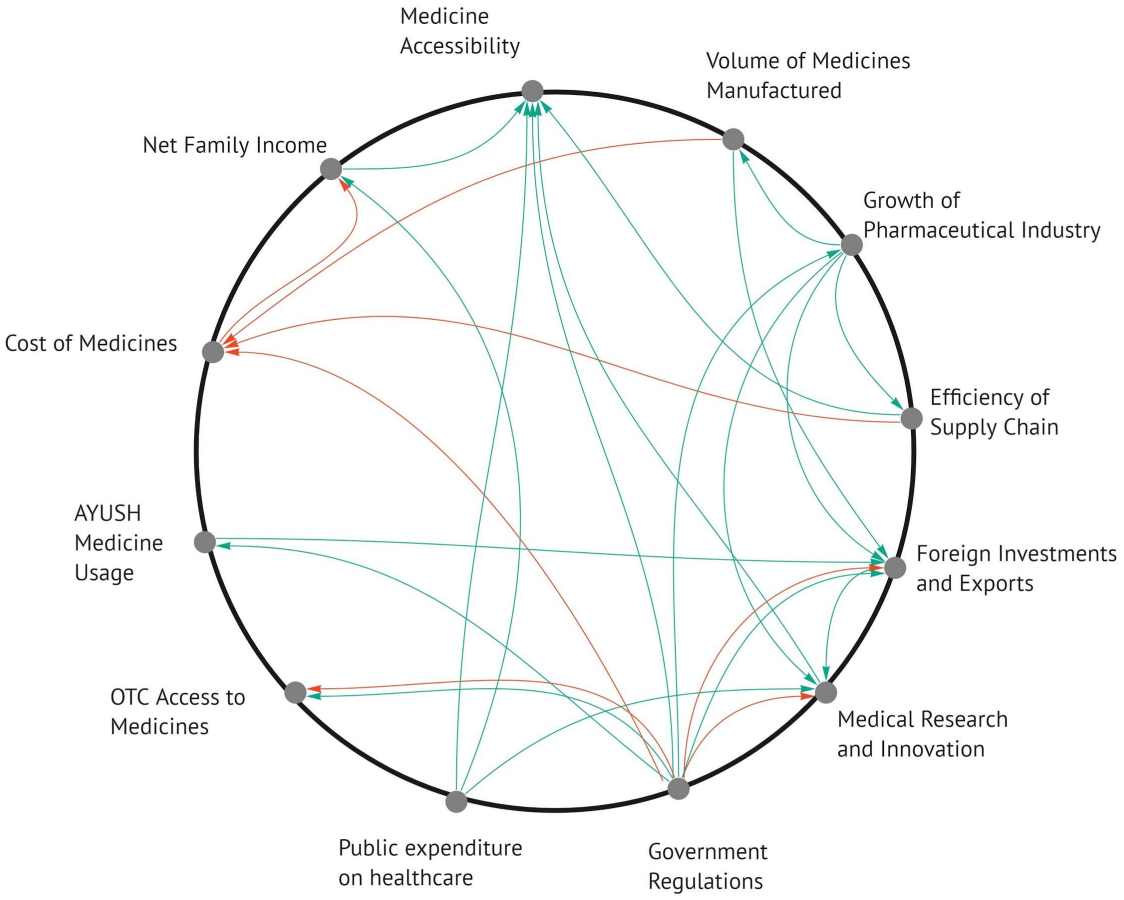
Diagnosis, Treatment and Prescription



Diagnosis, treatment and prescription

The Procurement Subsystem

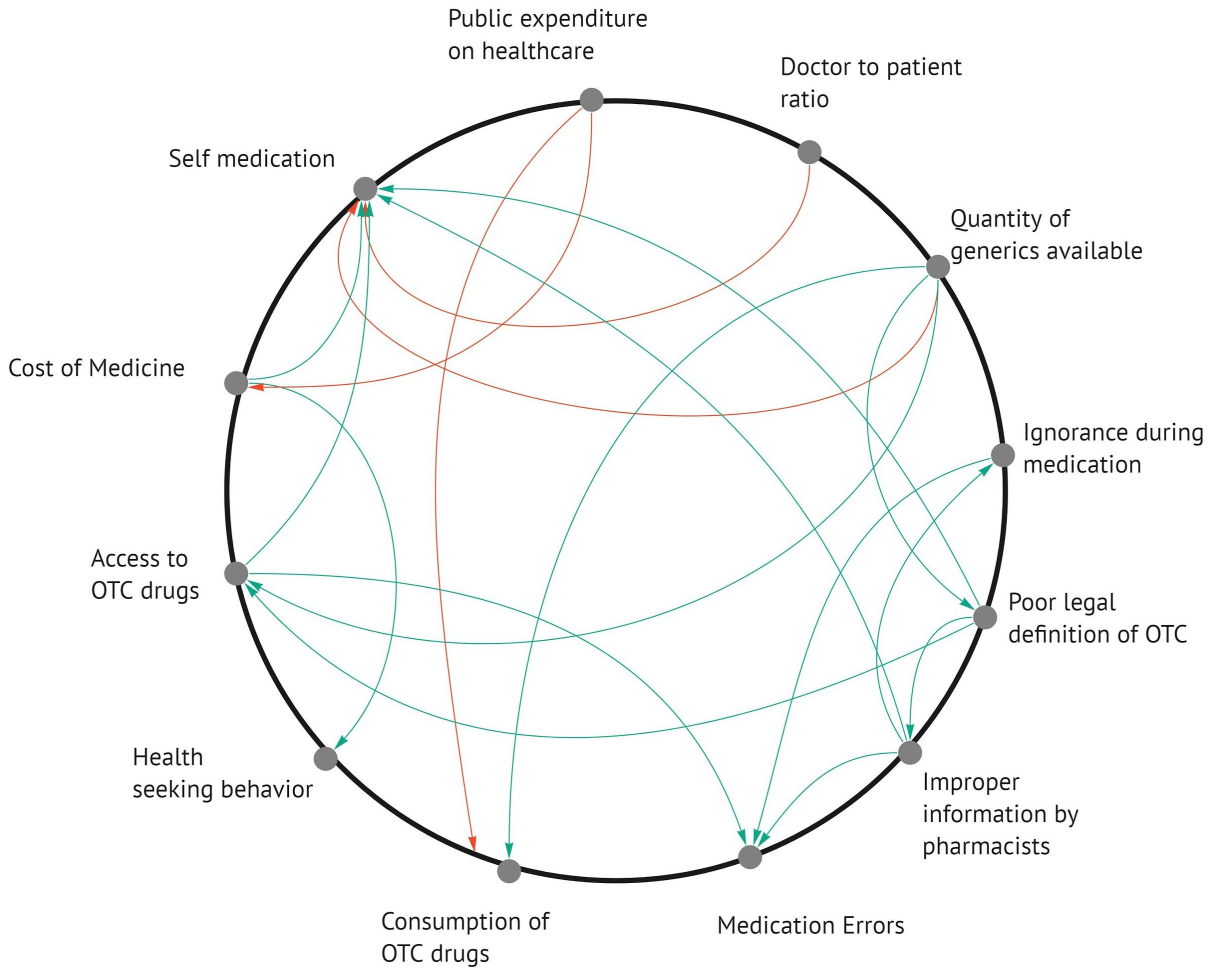
Medicine Production, Accessibility and Availability



Medicine production, Accessibility and availability

The Usage Subsystem

Patient Consumption, Awareness and Medication Errors



Medicine consumption, awareness and medication errors

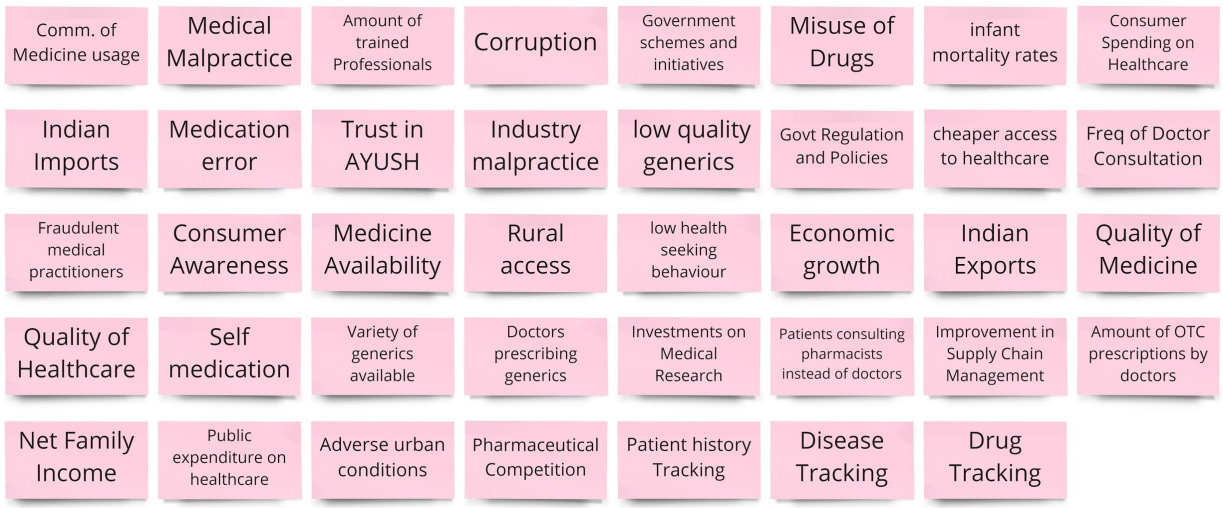
These Connection Circles helped identify the various entities within each subsystem and visualize the relationships between each of them.

Affinity

Research and observations from the prior mappings were summarized into useful insights.

We further clustered those insights to mitigate redundancy and create slightly broader and quantifiable variables.

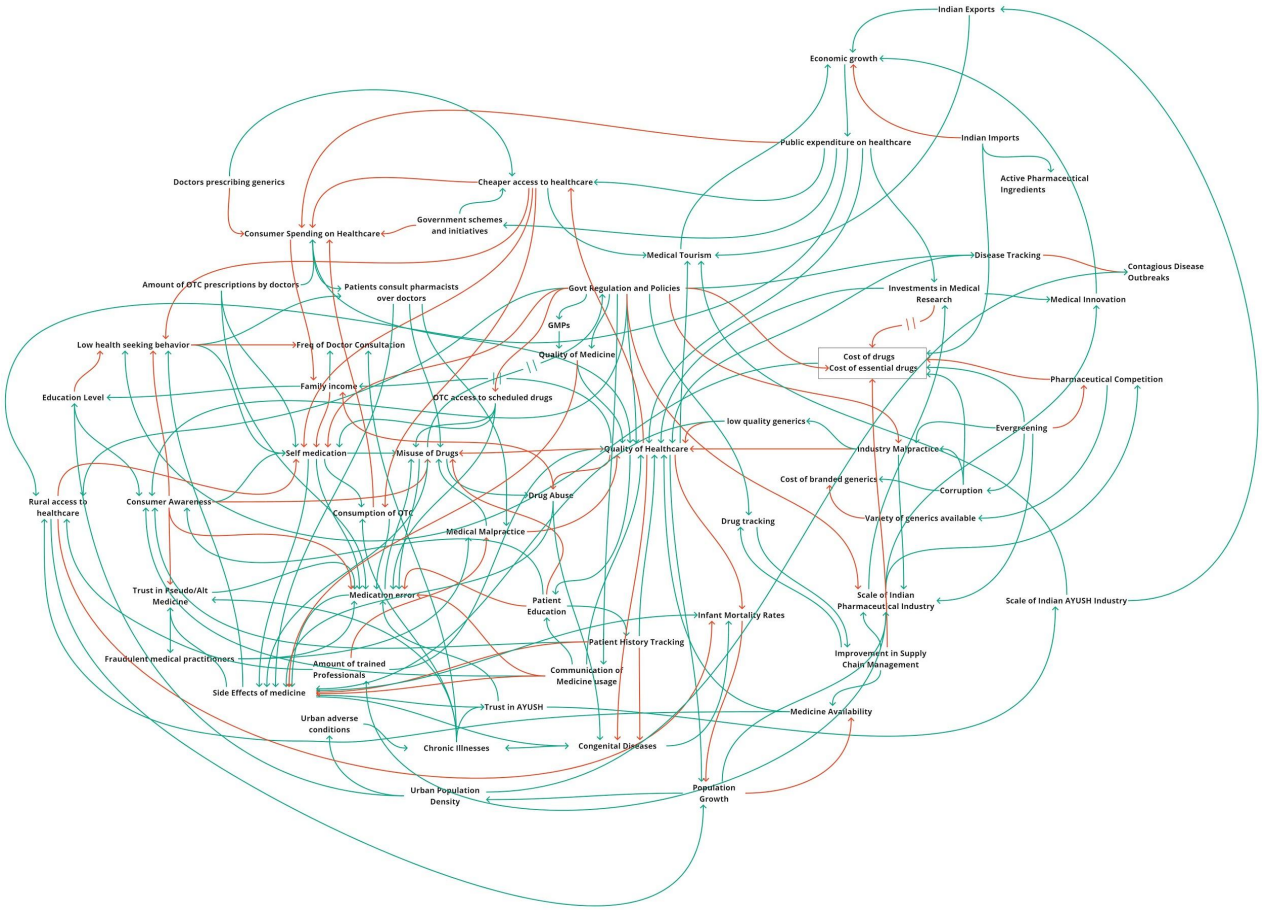
We were careful not to delete the granular insights which gave us our broader variables in order to be able to track back to these in the future and include them in subsequent sub-systems.



These consolidated insights were used further to map the holistic system.

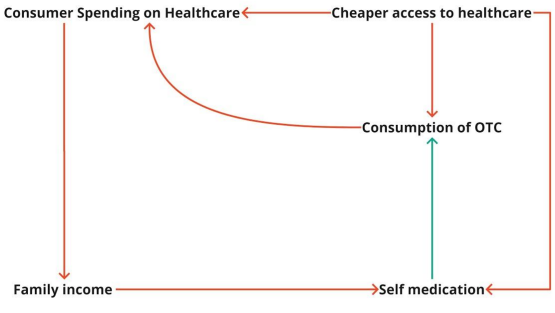
Mapping the Holistic System

The variables were placed with ‘Quality of Healthcare’ in the centre. They were then connected with other variables using direct and inverse signifier lines. Possible delays in the connections were also taken into consideration.

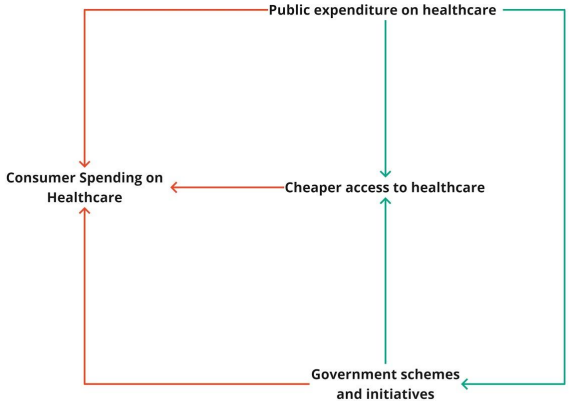


Insights from the System Mapping

Doing a holistic system map helped identify insights that were not easily visible before:

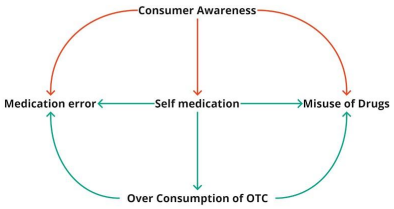


Low income households tend to self-medicate using OTC drugs

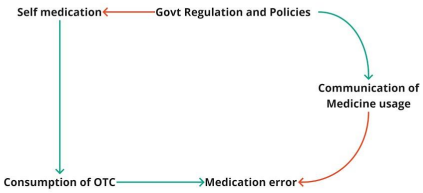


Factors that can help reduce Out of Pocket expenditure

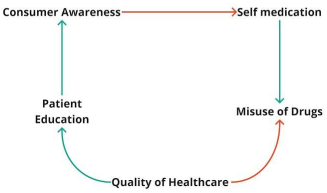
1. Low-income households are more likely to **self-medicate** using drugs available over the counter. Public spending and government schemes play in facilitating access to healthcare for working-class people.



Over consumption of OTC drugs occurs due to lack of consumer awareness and prominence of self medication



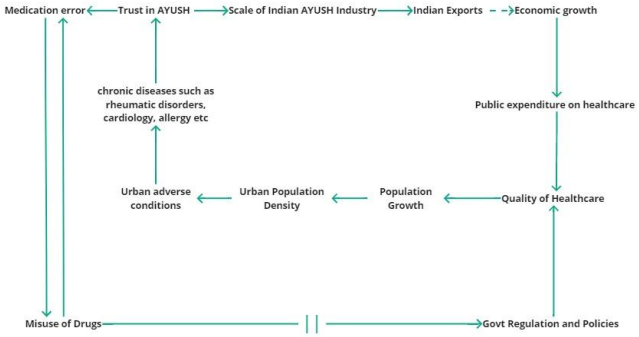
Medication errors often occur due to self medication



Misuse of drugs due to self medication

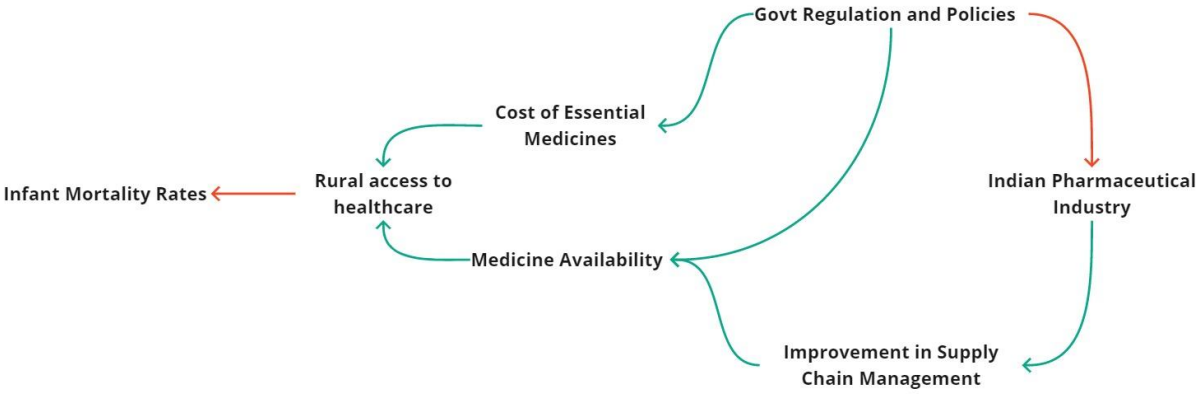
2. Large consumption of over-the-counter drugs occurs due to **a lack of consumer awareness** regarding their relevant risks, and the prominence of self-medication in India. People who self-medicate are prone to misuse drugs and have medication error-related issues.

Urbanisation and its subsequent adverse conditions lead to an increased trust in AYUSH and also Alt Healthcare solution



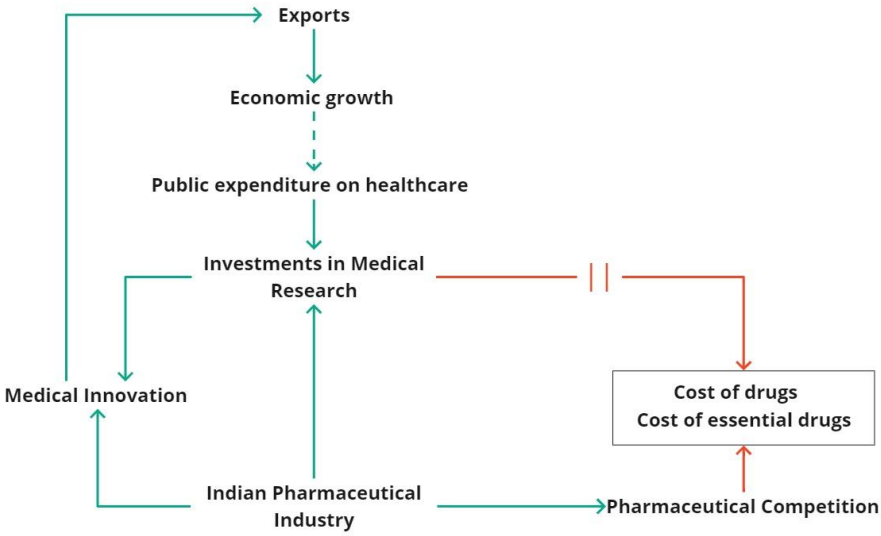
Trust in AYUSH positively affects the economy which in turn leads to urbanization and an increase in chronic disease which positively loops back. It also increases misuse of drugs which can lead to changes in governmetn regulations

3. The growing urban population density leads to related adverse health conditions like respiratory issues and since people have a **growing faith in Ayurvedic treatments** when it comes to respiratory, gastronomic, and other similar chronic illnesses, this subsequently leads to increased trust and growth of the AYUSH industry.



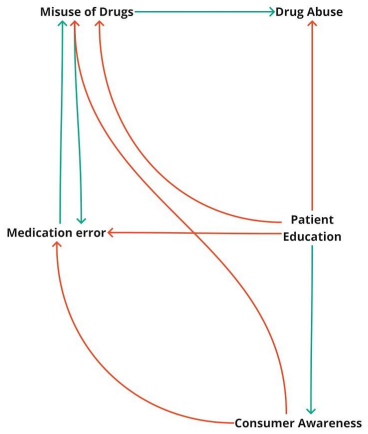
Govt Regulations incentivize Pharma industry to create efficient supply chains to improve rural healthcare

4. Strict regulations by the Indian govt on pharmaceutical companies lead to the companies creating more efficient supply chains to maximize reach and profits. This in turn leads to **increased rural access** to life-saving medicines and further reduces the severe infant mortality rates in rural India. Effective policies also help reduce the on-paper costs of drugs which increases rural access to medication.

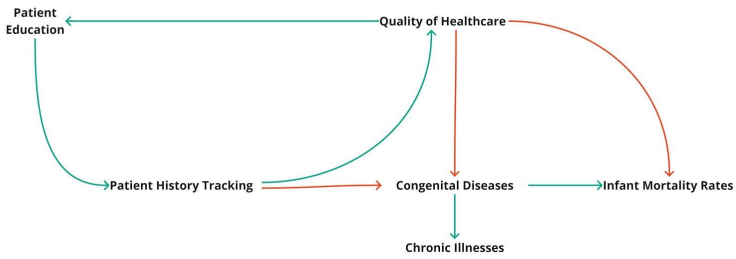


Investment in Medical Research and the Pharmaceutical Industry helps reduce consumer-side cost of drugs and encourages medical innovation

5. Increased **investments in the medical research** industry translate to fewer out-of-pocket expenses for Indian patients.



Patient Education leads to less medication errors and misuse of drugs and leads to better consumer awareness.



Patient Education leads to better patient history tracking which improves the prognosis of congenital diseases and chronic illnesses.

6. Increased **patient education** leads to less misuse and abuse of drugs as well as fewer medication errors. It also leads to increased consumer awareness. Increased education leads to better patient history tracking which reduces the risk and improves the prognosis for congenital and chronic diseases.

Possible Opportunities

The insights from our system mapping have been summarised into these 5 problem areas where we can intervene.

1. **Over-the-Counter Access to Medicines**
   Improving safe over the counter access to medication, addressing issues in govt regulations, and the complications with self-medication.

2. **Patient Medical Info Tracking**
   Standardised tracking of patient medical information

3. **Consumer Medication Errors**
   Reducing Medication errors: improving awareness about usage, risks and processes to mitigate those risks

4. **Patient Education**
   Increasing patient education on treatment, prescription and post-treatment action

5. **Rural Accessibility**
   Improving Rural Accessibility to better healthcare and medicines

Future Steps

Based on our progress so far, we have charted a plan for the coming two weeks:

- **Week 3:**
    - Finalize & Map Problem Area Further
    - Contextual Inquiry
    - Finalize a Problem Statement
    - Identify Possible Solutions
- **Week 4:**
    - Propose Final Solution

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