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## EMERGING AND PREVENTABLE HEALTH HAZARDS IN INDIA: A PUBLIC HEALTH PERSPECTIVE ON SUBSTANCE USE, METABOLIC DISORDERS, REPRODUCTIVE HEALTH, AND FOOD SAFETY

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### ABSTRACT

India is currently facing a complex and interlinked burden of health hazards arising from substance abuse, harmful alcohol consumption, addiction withdrawal syndromes, unsafe abortion practices, peptic ulcer disease, diabetes, hypertension, obesity, and food adulteration. These conditions collectively contribute to significant preventable morbidity, mortality, and economic strain on the healthcare system. Drug abuse and alcohol consumption remain major public health challenges, leading to overdose deaths, liver disease, injuries, and mental health disorders, while inadequate management of withdrawal syndromes further increases complications and relapse-related mortality. Unsafe abortion continues to be an important cause of maternal deaths, particularly in underserved populations, despite progressive legal frameworks. Non-communicable diseases such as diabetes, hypertension, and obesity are rapidly rising due to lifestyle transitions, dietary changes, and urbanization, substantially increasing cardiovascular and metabolic mortality. Peptic ulcer disease persists due to *Helicobacter pylori* infection, Non-Steroidal Anti-Inflammatory Drug (NSAID) misuse, and stress, while emerging therapeutic strategies aim to improve outcomes. Food adulteration and consumption of unsafe food expose populations to toxic chemicals and pathogens, resulting in acute poisoning, chronic organ damage, and foodborne illnesses. This article highlights the current scenario of these health hazards in India, emphasizing their pathophysiology, public health impact, and mortality burden. It also underscores the role of national laws, regulatory bodies, and public health programs, such as the (Narcotic Drugs and Psychotropic Substances) NDPS Act, (Medical Termination of Pregnancy) MTP Act, (National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke) NPCDCS, (Food Safety and Standards Authority of India) FSSAI initiatives, and Ayushman Bharat, in prevention and management. Strengthening policy implementation, promoting awareness, early screening, rational therapy, and intersectoral coordination are essential to reduce preventable deaths and improve population health outcomes in India.

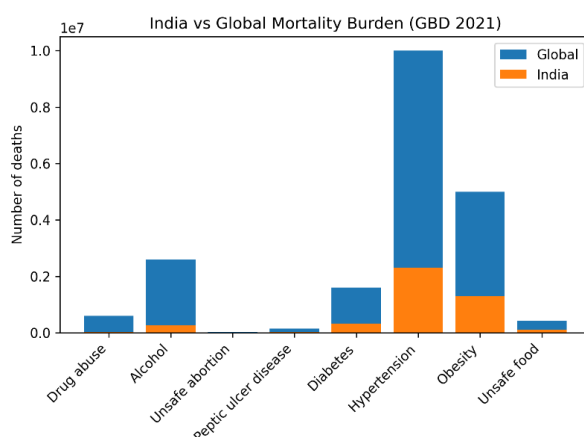
**KEYWORDS:** Drug abuse; Alcohol consumption; Non-communicable diseases; Maternal mortality; Food adulteration; Public health policy.

## INTRODUCTION

### 1. Global and India-specific mortality burden of major preventable health problems (GBD 2021)

**Table 1: Global and India-specific mortality burden of selected health problems.**

S. No.	Health Problem	Global Deaths	Deaths in India	Reference
1	Drug abuse (Drug use disorders)	~0.6 million	~27,000	[1]
2	Alcohol use (Alcohol-attributable deaths)	~2.6 million	~258,000	[1]
3	Addiction withdrawal syndrome	Not coded as a standalone cause; included under substance use disorders	Included within rows 1–2	[1]
4	Unsafe abortion (Maternal causes)	~39,000	~8,000	[1]
5	Peptic ulcer disease	~150,000	~33,000	[1]
6	Diabetes mellitus	~6.7 million	~1.0 million	[1]
7	Hypertension (High systolic blood pressure – attributable)	~10.8 million	~2.4 million	[1]
8	Obesity (High body-mass index – attributable)	~5.0 million	~0.8 million	[1]
9	Food adulteration / Unsafe food (Foodborne diseases)	~0.6 million	~0.15 million	[1]



**Figure 1. Comparative mortality burden of selected health hazards: India vs global scenario [1]**

## **Drug abuse in India**

**2.1 Legal framework and pathophysiological basis of drug abuse:** Drug abuse has emerged as a major public health challenge in India, contributing substantially to preventable morbidity and mortality. Within the legal and policy context, Mahato (2020) examined substance abuse under the Narcotic Drugs and Psychotropic Substances (NDPS) Act, 1985, highlighting its transition from a predominantly enforcement-driven law to a more balanced framework emphasizing drug demand reduction, prevention, treatment, and rehabilitation. The study reported a rising burden of substance use disorders, particularly among adolescents and young adults, along with gaps in public awareness, accessibility of de-addiction services, and intersectoral coordination. From a biological perspective, repeated exposure to psychoactive substances such as opioids, stimulants, sedatives, cannabis, and alcohol alters the mesolimbic dopamine pathway, especially the ventral tegmental area and nucleus accumbens, reinforcing compulsive drug-seeking behaviour. Chronic use induces neuroadaptations, neurotransmitter imbalance, and impaired prefrontal cortex function, leading to loss of impulse control. Systemic consequences include respiratory depression, cardiovascular toxicity, hepatic and renal injury, immune suppression, and increased infection risk, with overdose and long-term complications significantly elevating mortality [2,3,4].

**2.2 Management and prevention strategies:** Evidence-based treatment of substance use disorders includes medication-assisted therapy (methadone, buprenorphine, naltrexone), structured psychosocial counselling, relapse-prevention programs, and harm-reduction interventions such as needle-syringe exchange and overdose response services. Integrated care addressing comorbid mental and physical health conditions is critical for reducing relapse and mortality [3]. Preventive strategies focus on community education, early screening, school-based interventions, prescription monitoring, and integration of de-addiction services within primary healthcare. These measures are proven to reduce initiation of drug use and improve long-term recovery outcomes [4].

**2.3 India-specific programs and policy initiatives:** India has implemented several national initiatives to address drug abuse as a public health issue. The National Action Plan for Drug Demand Reduction (NAPDDR, 2018–2025), under the Ministry of Social Justice and Empowerment, prioritizes prevention, treatment, rehabilitation, and capacity building through Integrated Rehabilitation Centres for Addicts (IRCAAs). In parallel, the National Mental Health Programme (NMHP) and District Mental Health Programme (DMHP) provide counselling, de-addiction services, and psychosocial support at community and district levels. These programs collectively aim to reduce substance dependence, prevent overdose deaths, and promote social reintegration of affected individuals [5,6].

## **3. Alcohol consumption in India**

**3.1 Policy challenges and pathophysiological impact of alcohol consumption:** Alcohol consumption represents a major public health concern in India, contributing

substantially to preventable morbidity and mortality. Mahato and Singh (2021) critically examined alcohol-related policies at national and state levels, highlighting alcohol's strong association with liver disease, cardiovascular disorders, injuries, road traffic accidents, cancers, and mental health conditions. Their analysis revealed wide inter-state variability in taxation, availability, and regulatory enforcement, which weakens uniform alcohol control. Despite existing excise laws, socio-cultural acceptance, aggressive marketing, and enforcement gaps continue to promote harmful drinking patterns. From a biological perspective, chronic alcohol intake induces profound neurochemical, metabolic, and inflammatory disturbances. Ethanol enhances inhibitory (Gamma-Aminobutyric Acid-mediated) GABAergic signalling and suppresses excitatory glutamatergic transmission, while repeated exposure causes neuroadaptations leading to tolerance and dependence. Hepatic metabolism generates acetaldehyde and reactive oxygen species, driving oxidative stress and progressive liver injury. Systemically, alcohol contributes to hypertension, cardiomyopathy, pancreatitis, immune suppression, and neuropsychiatric disorders, collectively elevating mortality through liver failure, cardiovascular disease, cancers, and injuries [7,8,9].

### **3.2 Management and prevention strategies:**

Effective management of alcohol use disorder includes brief interventions, pharmacotherapy (naltrexone, acamprosate), treatment of complications such as liver disease and cardiomyopathy, and structured rehabilitation programs. Multidisciplinary care improves abstinence rates and reduces relapse-related morbidity [8]. Population-level interventions, taxation, restricted availability, advertising bans, and drink-driving enforcement, are among the most effective strategies to reduce alcohol-related harm. Integration of early screening and counselling into primary care further lowers alcohol-attributable mortality [9].

### **3.3 India-specific programs and policy initiatives:**

In India, state excise policies regulate alcohol pricing and availability, while the NMHP addresses alcohol use disorders through counselling and treatment services. Additionally, Ayushman Bharat-Health and Wellness Centres (AB-HWCs) provide community-level screening, brief interventions, and referral services for alcohol-related disorders, strengthening early detection and prevention [6,10].

## **4. Addiction withdrawal syndrome**

**4.1 Clinical significance and pathophysiological basis of alcohol withdrawal syndrome:** Alcohol withdrawal syndrome (AWS) is a serious and often under-recognized contributor to morbidity and mortality among individuals with alcohol dependence. Mahato et al. (2021) emphasized that abrupt cessation of alcohol intake can precipitate severe and potentially fatal complications, including seizures, delirium tremens, autonomic instability, severe agitation, and suicidal behaviour. Delayed recognition and inadequate management significantly increase relapse rates, hospitalizations, and preventable deaths. Effective care requires medically supervised detoxification, appropriate pharmacotherapy, particularly benzodiazepines, along with patient education, psychosocial counselling, and long-term rehabilitation support.

Pathophysiologically, AWS results from rebound neurophysiological hyperactivity following sudden discontinuation of chronic alcohol use. Prolonged exposure causes down-regulation of inhibitory GABAergic pathways and up-regulation of excitatory glutamatergic and noradrenergic systems; cessation unmasks this imbalance, producing autonomic overactivity, tremors, anxiety, insomnia, seizures, and delirium. (N-Methyl-D-Aspartate) NMDA receptor hyperexcitability and noradrenergic overdrive are central mechanisms. Although often self-limiting, untreated complications such as delirium tremens, seizures, dehydration, and electrolyte imbalance can be life-threatening, underscoring the need for timely medical supervision and strengthened de-addiction services in India [9,11,12,13].

#### **4.2 Management and prevention strategies:**

Effective management requires medically supervised detoxification, tailored to the substance involved. Benzodiazepines are the mainstay for alcohol withdrawal, while  $\alpha_2$ -adrenergic agonists are commonly used for opioid withdrawal. Supportive care includes fluid and electrolyte correction, nutritional support, and seizure prophylaxis. Early recognition and structured protocols substantially reduce complications and mortality [12,13]. Preventive strategies focus on gradual tapering, continuity of care following detoxification, psychosocial counselling, and linkage to long-term addiction treatment programs. These measures reduce relapse rates and prevent severe withdrawal-related complications.

#### **4.3 India-specific programs and policy initiatives:**

In India, de-addiction centres under the National Action Plan for Drug Demand Reduction (NAPDDR, 2018–2025) and the District Mental Health Programme (DMHP) provide medically supervised detoxification, counselling, and follow-up care. These initiatives strengthen access to withdrawal management services and aim to reduce substance-related morbidity and mortality through integrated rehabilitation and community-based support [5].

### **5. Right to safe abortion**

**5.1 Public health importance and pathophysiological consequences of unsafe abortion:** Unsafe abortion remains a major yet preventable contributor to maternal morbidity and mortality in India. Mahato et al. (2022) emphasized that limited access to safe and legal abortion services leads to avoidable maternal deaths, primarily due to haemorrhage, sepsis, uterine perforation, and delayed medical care. Recognizing abortion as a reproductive right, effective implementation of the Medical Termination of Pregnancy (MTP) Act, availability of trained healthcare providers, and strengthened post-abortion care services can significantly reduce maternal mortality ratios. From a pathophysiological perspective, unsafe abortion causes maternal harm through mechanical trauma, severe bleeding, infection, and systemic inflammatory responses. Procedures performed without sterile conditions may result in uterine perforation, cervical injury, retained products of conception, hypovolemic shock, and septic abortion progressing to multi-organ failure if untreated. Delayed access to care further increases the risk of infertility and death. The combined effects of tissue injury, infection, and delayed intervention explain the high yet preventable mortality

associated with unsafe abortion, particularly in rural and resource-limited settings [14,15,16].

### **5.2 Management and prevention strategies:**

Effective management of unsafe abortion requires timely post-abortion care, including broad-spectrum antibiotics for sepsis, uterotonics for hemorrhage control, fluid resuscitation, and surgical intervention when necessary. Early referral and emergency obstetric care are critical to reducing fatal outcomes. Preventive strategies focus on access to safe and legal abortion services, availability of trained providers, contraception counselling, and public awareness. Evidence shows that these measures dramatically reduce maternal mortality and long-term reproductive complications [16].

### **5.3 India-specific programs and policy initiatives:**

India has strengthened reproductive healthcare through legislative and programmatic measures. The Medical Termination of Pregnancy (Amendment) Act, 2021 expanded legal access to abortion and enhanced safety provisions. Additionally, the Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCH+A) strategy supports comprehensive post-abortion care, referral services, and maternal health surveillance. Together, these initiatives aim to reduce preventable maternal deaths and ensure equitable reproductive healthcare access nationwide [17].

## **6. Peptic ulcer disease**

**6.1 Pathophysiology and emerging therapeutic approaches in peptic ulcer disease:** Peptic ulcer disease (PUD) develops from an imbalance between gastric mucosal defence mechanisms and aggressive factors such as gastric acid, pepsin, *Helicobacter pylori* infection, and non-steroidal anti-inflammatory drugs (NSAIDs). *H. pylori* colonize the gastric mucosa and produces urease, converting urea to ammonia, which neutralizes gastric acid and facilitates bacterial survival, while inducing chronic inflammation, cytokine release, and epithelial injury that weaken mucosal protection. NSAIDs further exacerbate mucosal damage by inhibiting cyclooxygenase enzymes and reducing prostaglandin-mediated mucus and bicarbonate secretion, increasing susceptibility to acid injury. These processes lead to ulcer formation and complications such as bleeding, perforation, and gastric outlet obstruction, contributing significantly to morbidity and mortality, particularly in elderly and comorbid patients. Recent therapeutic advances highlight potassium-competitive acid blockers (P-CABs) and probiotics as effective alternatives to conventional proton pump inhibitor-based therapy. A study in 2025 demonstrated that vonoprazan provides rapid, potent, and sustained acid suppression with improved *H. pylori* eradication rates, while probiotics such as *Lactobacillus* species restore gastric microbiota, reduce adverse effects, and lower recurrence, supporting a safer and resistance-conscious approach to PUD management [18,19,20].

### **6.2 Management and prevention strategies:**

Standard management includes *H. pylori* eradication therapy, acid suppression (PPIs or P-CABs), avoidance of NSAIDs, and endoscopic management of complications



such as bleeding. Emerging regimens incorporating vonoprazan and probiotics offer improved outcomes in resistant cases [19]. Preventive measures focus on rational NSAID use, smoking cessation, alcohol moderation, sanitation, and early detection of *H. pylori* infection to reduce ulcer recurrence and complications.

### **6.3 India-specific programs and policy initiatives:**

In India, the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) supports screening and management of gastrointestinal and lifestyle-related disorders at the primary care level. Through integration with Ayushman Bharat–Health and Wellness Centres, early diagnosis, rational therapy, and referral services for PUD are strengthened, contributing to reduced ulcer-related morbidity [21].

## **7. Diabetes Mellitus**

**7.1 Public health burden and pathophysiological mechanisms of diabetes mellitus:** Diabetes mellitus has emerged as a rapidly escalating public health crisis in India, contributing significantly to premature mortality, disability, and rising healthcare expenditure. Mahato, Ojha, and Agnihotri (2023) highlighted the increasing prevalence of diabetes, earlier age of onset, and the growing burden of microvascular and macrovascular complications, including cardiovascular disease, nephropathy, neuropathy, and retinopathy. Rapid urbanization, physical inactivity, unhealthy dietary patterns, and increasing obesity were identified as major drivers of this epidemic, underscoring the need for early diagnosis, lifestyle modification, rational pharmacotherapy, patient education, and population-based prevention strategies. Pathophysiologically, diabetes is characterized by chronic hyperglycemia due to defects in insulin secretion, insulin action, or both. Type 1 diabetes results from autoimmune destruction of pancreatic  $\beta$ -cells, whereas type 2 diabetes involves insulin resistance with progressive  $\beta$ -cell dysfunction. Persistent hyperglycemia induces glucotoxicity and lipotoxicity, activating oxidative stress, inflammatory pathways, and advanced glycation end-product formation, leading to endothelial dysfunction, accelerated atherosclerosis, and increased risk of cardiovascular events, renal failure, infections, and mortality [22,23,24].

**7.2 Management and prevention strategies:** Effective diabetes management focuses on achieving glycemic control through lifestyle modification, oral antidiabetic drugs and/or insulin therapy, and regular screening for complications such as nephropathy, retinopathy, and cardiovascular disease [23]. Preventive strategies include weight management, regular physical activity, healthy dietary practices, tobacco cessation, and early detection through community-based screening programs. These interventions significantly reduce diabetes incidence and mortality [24].

**7.3 India-specific programs and policy initiatives:** In India, the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS) and Ayushman Bharat–Health and Wellness Centres (AB-HWCs) enable population-based screening, free provision of essential medicines, lifestyle counselling, and referral services at the primary care level. These initiatives

strengthen early diagnosis and long-term management of diabetes, aiming to reduce complications and diabetes-related mortality nationwide [10,21].

## **8. Hypertension**

**8.1 Public health importance, salt reduction, and pathophysiological basis of hypertension:** Hypertension is one of the leading modifiable risk factors for cardiovascular morbidity and mortality globally and in India. Mahato (2023) highlighted dietary salt reduction as a simple, cost-effective, population-level strategy for preventing and controlling hypertension, noting that excessive sodium intake increases plasma volume, vascular resistance, and sympathetic nervous system activity, resulting in sustained elevation of blood pressure. Robust evidence shows that reducing salt intake lowers both systolic and diastolic blood pressure in normotensive and hypertensive individuals, thereby decreasing the risk of stroke, myocardial infarction, heart failure, and renal disease. Pathophysiologically, hypertension arises from complex interactions among genetic, environmental, neural, hormonal, and renal mechanisms, including increased sympathetic activity, overactivation of the renin–angiotensin–aldosterone system, endothelial dysfunction, and impaired renal sodium excretion. Elevated angiotensin II promotes vasoconstriction and vascular remodelling, while reduced nitric oxide bioavailability increases peripheral resistance, leading to target-organ damage and premature mortality [25,26,27].

**8.2 Management and prevention strategies:** Hypertension management includes antihypertensive pharmacotherapy, dietary salt reduction, weight management, and control of comorbid conditions such as diabetes and dyslipidemia. Population-level interventions, dietary sodium reduction, regular physical activity, tobacco cessation, and healthy dietary practices, are among the most cost-effective strategies for preventing hypertension and its complications [26,27].

**8.3 India-specific programs and policy initiatives:** In India, hypertension prevention and control are addressed under the NPCDCS and AB-HWCs. These initiatives support population-based screening, free provision of essential antihypertensive medicines, lifestyle counselling, and referral services at the primary healthcare level, contributing to early detection and reduction of hypertension-related morbidity and mortality [10,21].

## **9. Obesity**

**9.1 Limitations of BMI and pathophysiological mechanisms of obesity:** Obesity is commonly assessed using body mass index (BMI); however, growing evidence indicates that BMI alone is an imperfect indicator of body fat accumulation and related health risks. Mahato, Kushwaha, and Patel (2024) highlighted that BMI fails to distinguish between fat mass and lean body mass and does not account for fat distribution. As a result, individuals with high muscle mass may be misclassified as overweight, while those with normal BMI but excess visceral adiposity, particularly prevalent in Asian populations, may be incorrectly labelled as healthy. Exclusive reliance on BMI can therefore underestimate cardiometabolic risk, including diabetes, hypertension, and cardiovascular disease, underscoring the need for complementary



measures such as waist circumference, waist–hip ratio, body fat percentage, and metabolic biomarkers for accurate risk assessment. Pathophysiologically, obesity is a chronic metabolic disorder characterized by excessive adipose tissue accumulation due to sustained imbalance between energy intake and expenditure. Adipocyte hypertrophy and hyperplasia lead to dysregulated adipokine secretion, leptin resistance, insulin resistance, chronic low-grade inflammation, oxidative stress, and vascular dysfunction, markedly increasing the risk of type 2 diabetes, hypertension, cardiovascular disease, non-alcoholic fatty liver disease, certain cancers, and premature mortality [28,29,30].

**9.2 Management and prevention strategies:** Obesity management requires a multimodal approach including calorie-restricted diets, regular physical activity, behavioural modification, and pharmacotherapy where indicated. Bariatric surgery is reserved for selected individuals with severe obesity and associated comorbidities. Population-level interventions such as healthy food environments, physical activity promotion, nutrition education, and early-life interventions are essential to curb the long-term obesity burden [29,30].

**9.3 India-specific programs and policy initiatives:** In India, obesity prevention is addressed through national initiatives such as the Fit India Movement, POSHAN Abhiyaan, and the Eat Right India program. These initiatives promote physical activity, balanced nutrition, reduction of unhealthy food consumption, and early prevention of metabolic disorders. Strengthening community awareness, food labelling, and lifestyle counselling through primary healthcare systems remains central to reducing obesity-related morbidity and mortality nationwide [34].

## **10. Food adulteration and unsafe food consumption**

**10.1 Public health impact and pathophysiological consequences:** Food adulteration remains a serious yet under-recognized public health challenge in India, contributing significantly to preventable morbidity and mortality. Patel and Mahato (2024) highlighted turmeric adulteration with lead chromate as a critical concern, an illegal practice adopted to enhance color and market value. Chronic dietary exposure to lead-contaminated turmeric markedly increases the risk of lead poisoning, particularly among children and pregnant women, leading to neurotoxicity, anaemia, renal impairment, gastrointestinal disturbances, and developmental deficits. Routine dietary consumption, low consumer awareness, and weak regulatory surveillance disproportionately expose low- and middle-income populations. Pathophysiologically, adulterated food causes harm through chemical, infectious, and metabolic mechanisms. Lead induces oxidative stress, inhibits enzymatic activity, disrupts mitochondrial function, interferes with heme synthesis, and damages neural tissue, while chronic exposure results in nephrotoxicity, hepatotoxicity, immune dysfunction, and carcinogenic risk. Microbial and chemical adulterants further trigger gastrointestinal infections, systemic inflammation, dehydration, and sepsis. Collectively, these mechanisms substantially elevate disease burden and premature mortality, emphasizing that food adulteration is not merely a regulatory violation but a

critical public health emergency requiring urgent preventive and surveillance-based interventions [31,32,33].

**10.2 Management and prevention strategies:** Early detection of poisoning, laboratory confirmation of heavy metal exposure, and supportive medical care, including chelation therapy when indicated, are essential to reduce complications. Preventive strategies include stringent regulatory enforcement, routine food surveillance, rapid testing, supply-chain monitoring, farmer and trader education, and consumer awareness campaigns. Adoption of safe agricultural and processing practices is critical to eliminating adulteration at source [31,32].

**10.3 India-specific programs and policy initiatives:** In India, the Food Safety and Standards Authority of India (FSSAI) play a central role in combating food adulteration through initiatives such as Eat Right India, DART (Detect Adulteration with Rapid Tests), and Food Safety on Wheels. These programs strengthen food surveillance, on-site testing, and public education. Expanding routine monitoring, enforcing penalties for adulteration, and empowering consumers through awareness are essential to reduce adulteration-related health hazards and prevent lead-associated morbidity and mortality nationwide [34].

**Table 2. Common food items, adulterants, methods of identification**

S. No.	Common Food Item	Common Adulterant	Method of Identification (Simple Tests)	Reference
1	Milk	Water, starch, detergent, urea	Lactometer test (water); iodine test (starch); persistent foam on shaking (detergent)	[32,36]
2	Turmeric powder	Metanil yellow, lead chromate	Add dilute Hydrochloric acid → pink color (metanil yellow); laboratory heavy metal test (lead)	[33,35]
3	Chilli powder	Brick powder, Sudan dyes	Sprinkle in water → sediment (brick); solvent extraction + color change (Sudan dyes)	[32,36]
4	Mustard oil	Argemone oil	Nitric acid test → reddish brown color	[35,37]
5	Honey	Sugar syrup, jaggery syrup	Drop in water → rapid dispersion (adulterated); flame test (pure burns steadily)	[32,36]
6	Tea leaves	Iron filings, used tea leaves	Use magnet (iron); soak in water → color release (used leaves)	[33,35]
7	Coffee powder	Chicory	Sprinkle on water → chicory sinks rapidly, coffee floats	[36]
8	Pulses (dal)	Kesari dal	Visual inspection (yellow wedge-shaped seeds); lab chromatography	[32,37]
9	Sugar	Chalk powder	Dissolve in water → insoluble	[20]

			residue	
10	Edible oils	Mineral oil	Paper blot test → greasy ring persists	[33,36]

**Table 3: Mapping of Indian public health programs to outcomes and mortality reduction**

S. No.	Health Hazard	National Program / Policy	Key Interventions	Outcomes & Mortality Reduction Impact	References
1	Drug abuse	NAPDDR	Prevention campaigns, Integrated Rehabilitation Centres for Addicts (IRCA), rehabilitation	Reduced substance dependence, fewer overdose deaths, improved social reintegration, lower relapse-related mortality	[04,18]
2	Drug abuse & withdrawal	NMHP & DMHP	Counselling, medically supervised detoxification, psychiatric care	Reduced withdrawal complications, suicides, and substance-related hospital mortality	[9,12]
3	Alcohol consumption	State Excise Policies + AB-HWCs	Taxation, restricted availability, screening, brief interventions	Decline in alcohol-attributable liver disease, injuries, and cardiovascular deaths	[4,8]
4	Unsafe abortion	MTP Act (Amended, 2021) + RMNCH+A	Legal access, trained providers, post-abortion care	Significant reduction in maternal mortality due to unsafe abortion, hemorrhage, and sepsis	[16,17]
5	Peptic ulcer disease	NPCDCS + AB-HWCs	Early diagnosis, acid suppression, <i>H. pylori</i> eradication	Reduced ulcer complications (bleeding, perforation) and ulcer-related deaths	[19,21]

6	Diabetes mellitus	NPCDCS	Population screening, free essential medicines, lifestyle counselling	Lower diabetes-related cardiovascular, renal, and infection-related mortality	[23,24]
7	Hypertension	NPCDCS + AB-HWCs	BP screening, antihypertensive therapy, follow-up	Reduced stroke, myocardial infarction, heart-failure deaths	[26,27]
8	Obesity	Fit India Movement + POSHAN Abhiyaan	Physical activity promotion, nutrition education	Long-term reduction in obesity-linked diabetes, hypertension, and CVD mortality	[29]
9	Food adulteration / unsafe food	FSSAI (Eat Right India, DART, Food Safety on Wheels)	Surveillance, testing, consumer awareness	Reduced foodborne illness outbreaks, poisoning cases, and related deaths	[32,36]

### CONCLUSION:

The current health scenario in India reflects a growing convergence of substance-related disorders, unsafe reproductive practices, non-communicable diseases, gastrointestinal disorders, and food safety challenges, all of which significantly contribute to preventable morbidity and mortality. Drug abuse, harmful alcohol consumption, and poorly managed withdrawal syndromes continue to strain mental health and emergency care services. At the same time, unsafe abortion practices, despite legal safeguards, remain a critical contributor to maternal deaths. The rapid rise in diabetes, hypertension, and obesity highlights the urgent need for lifestyle modification and early intervention, while peptic ulcer disease and food adulteration underscore persistent gaps in rational drug use and regulatory enforcement. National initiatives and policies have demonstrated potential in reducing disease burden; however, their success depends on effective implementation, public awareness, and intersectoral collaboration. A comprehensive, prevention-focused approach integrating policy enforcement, healthcare delivery, and community engagement is essential to curb these health hazards and improve long-term population health outcomes in India.

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## DISCLAIMER:

This article is intended solely for academic and educational purposes. The views and interpretations expressed are those of the author and are based on the cited literature. Artificial intelligence (AI) tools were used to assist with drafting, language refinement, and organization of content.

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