

# Financing of NCD Prevention in LMICs: Pakistan Case Study

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## Objective:

Prevention programs are increasingly seen as critical for tackling the rising burden of non-communicable diseases (NCDs), but tend to be under-prioritized and under-funded, particularly in low- and middle-income countries. The objective of this study is to estimate spending on NCD prevention in Pakistan and identify the enablers, challenges and dynamics underpinning population-level NCD prevention spending, with particular focus on tobacco use, harmful use of alcohol, unhealthy diets and physical inactivity.

## Methods:

Primary and secondary data collection was used to examine processes and organizational contexts that shape the formulation of policy and financial frameworks for NCD prevention. The methodology was categorized into three tiers; an academic literature review, scrutiny and analysis of official policy documents and budgetary data on health and NCDs, and in-depth stakeholder interviews with key government officials leading NCD programs. Government and government-routed donor spending on population level prevention was gauged to estimate NCD prevention spending. Where possible, impact of prevention programs on disease incidence and risk factors was gauged through available outcome indicators.

## Results:

Non-communicable diseases are now the predominant cause of mortality and morbidity in Pakistan, accounting for approximately 58% of total deaths. The leading risk factors for NCDs in Pakistan are tobacco use, unhealthy diet, physical inactivity, obesity and air pollution.

Governance issues and insufficient investment in health have long been challenges for the health sector.

## Conclusion:

Pakistan faces a massive NCD burden, which continues to grow with time. NCDs like CVDs, diabetes, hypertension and cancers are among the main causes of mortality and morbidity in the country and increasingly form the reason for much of health spending and hospitalizations. However, Pakistan's health policy focus remains on communicable and nutritional defects, with almost no focus on population-level prevention of NCDs. While federal and provincial governments have begun to act to formulate a consolidated NCD policy response in recent years, there is a lot of ground that still remains to be covered for Pakistan to respond adequately to its NCD epidemic.

## Introduction

Pakistan has the world's sixth highest population at around 212 million.<sup>1</sup> The country has been under military rule for three decades and during the cold war and the decade after 9/11, the country's economic growth and social fabric were both deeply impacted. Misgovernance and political instability have negatively impacted health performance. Widespread poverty, unemployment and large levels of public debt remain serious health challenges.

While progress has been made at increasing life expectancy, from 60 in 1998 to 66 in 2018, it still remains slower than its peers in South Asia and other similarly-placed developing countries. Pakistan's fertility rate has reduced from over 6 in the 1970s to 3.51 in 2018, but it still remains far higher than others in South Asia.<sup>2</sup>

A diminishing role of public sector health provision has led to Pakistan becoming one of the countries with the highest share of out-of-pocket expenditures in the world. Though there have been improvements in health status over the last 65 years, health indicators lag behind when compared to "peer" countries. According to some estimates, more than 78% pay out of pocket for healthcare and private sector health provision continues to predominate.

The country has experienced rapid urbanization in recent decades, with close to 40% of its population now living in urban or peri-urban centres, a rate that is the highest in South Asia. The related changes in lifestyles and habits are contributing to a shifting disease burden. Pakistan is now in the midst of an epidemiological transition and currently faces a double burden of communicable diseases along (with maternal and perinatal) as well as infectious diseases.

While public health debates in Pakistan have focused more on continuing battles with communicable disease like polio, NCDs like heart disease, diabetes and hypertension now contribute significantly to adult mortality and morbidity in Pakistan — they are amongst the top 10 causes of mortality and morbidity within the country, and WHO estimates indicate that they account for approximately 58 per cent of total deaths in Pakistan.<sup>3</sup> Left unchecked, this problem will get worse and put additional stress on Pakistan's chronically underfunded health system.

The link between NCDs and household productivity and income is now well-established. Although ill health nearly always lowers household income, households affected by NCDs experience greater income loss relative to households reporting general infectious diseases. This is because expenditure associated with the acute and long-term effects of NCDs is high, resulting in catastrophic health expenditure for households. Care and treatment cost studies have shown that NCDs reduce disposable incomes, leaving families with less money to use on other vital needs and also negatively affects the future productivity of the patients. People hospitalized with chronic diseases usually end up poorer, and in many cases end up with huge debts.

Pakistan has begun to adapt its health system to its epidemiological transition and changing disease burden. It has taken some initial steps including an NCD Action Plan, steps to tax tobacco and the establishment of NCD units in provincial health ministries. However, much remains to be done in terms for re-orienting the health system to address the NCD threat and organizing a systemic and inter-sectoral response to NCDs that focuses on prevention and health promotion.

Limited availability and allocation of funds for financing NCD control and prevention are an important part of the reason for the continued persistence of chronic NCDs around the world. There is an established tendency for governments to provide more funding for treatment than prevention, almost in inverse proportion to potential impact – that is, while prevention is clearly the best use of limited resources it is often easier to secure resources for treatment instead. This is also the case in Pakistan and will require evidence, will and innovation to address.

This study will investigate the dynamics of NCD prevention financing in Pakistan to identify the key lessons, challenges and barriers from the Pakistani experience with implementing and financing NCD prevention and control. It will do so by first examining the socio-economic and institutional context of NCDs in Pakistan, outlining the key policy responses and interventions of the Pakistani government to the NCD crisis, and understanding how, if any, financing for NCD prevention is raised and spent, and what kind of economic, social, political and institutional barriers stand in the way of its effective mobilization. The key lessons and challenges emerging from Pakistan experience will then be discussed and summarized, and a set of actionable outcomes and recommendations will be presented.

## Methodology

The methodology for this assessment consisted of two parts: a review of academic and grey literature and budgetary data and data collection in the form of interviews with key informants. The study adopts the critical theory approach, which acknowledges reality as contextualized and shaped by various social, cultural, economic and political factors and sees the research process as a means to bring about change and transformation. In this study, the critical theory approach was employed to question existing frameworks, organizational hierarchies and red-tape, identify impediments arising from political, economic, systemic and bureaucratic, and largely regional and global contexts, before proceeding to present a set of actionable outcomes and recommendations.

Public financing was defined as resources allocated/mobilized indigenously (revenues) at the country level. This also includes the use of catalytic official development assistance as grants/loans and/or monies from philanthropic sources predicated on the understanding that these are meant to build country capacity and are a stop gap arrangement. This implies that funds from ODA loans and grants, as well as from philanthropic sources, need to go first into the government's resources. The World Bank definition of prevention was employed, as those preventative and "public health services ... designed to enhance the health status of the population as distinct from the curative services which repair health dysfunction."

The investigators used a search strategy involving Medline, Google Scholar, Embase, JStor and Web of Knowledge, databases to identify peer-reviewed articles that examined NCD prevention and financing. In addition, the first 20 pages of Google searches were examined to identify articles from the grey literature. The main search terms were 'NCD', 'prevention', 'financing' and 'Pakistan'. Additional search terms related to the topic were: 'promotion', 'non-communicable disease', and 'budget'. Additional search terms related to policy were: tax, legislation, ban, intervention, labelling, law, and standards. An additional search was also carried out for policies related to risk factors using the terms 'alcohol', 'tobacco', 'diet', 'nutrition', and 'physical activity'. Based on the information in the abstracts, those studies were selected for review that: a) were of

an empirical nature; b) examined NCD prevention and its financing; and c) dated from late 20th century onward, when concerted policy efforts to counter NCDs began in the region.

The selected studies were reviewed and organized into categories of analysis that were refined based on the evidence emerging from the literature. Bibliographies of selected studies were also reviewed for relevant literature to NCD or risk factor prevention policies. Later, a specific search was undertaken for broader literature, including policy frameworks on NCDs in Pakistan and the region.

The investigators then reached out to the governments and relevant departments/bodies to procure reports, budget plans, policy guidelines and similar material. This data was analysed thematically, to further refine research questions and thoroughly revise interview guides. At the end of the second tier, the investigators shortlisted potential participants to be recruited for in-depth interviews. These included key stakeholders such as officials from the Ministry of Health, Ministry of Finance, planning ministry or staff from the office of the head of state.

## Health trends

Pakistan's health indicators have registered some improvement over the years, but they continue to remain abysmal. TFR was 5.4 children per women in 1990-91 and it reduced to 3.4 in 2018, which is the highest in South Asia and still fuels unsustainable population growth.<sup>2</sup> Under Five Mortality has moderately decreased from 124 per 1000 live births in 1990 to 67 per 1,000 live births in 2019.<sup>4</sup> Neonatal disorders remain the single highest cause of death in the country, with diarrheal diseases placed fourth on the list.<sup>Error! Bookmark not defined.</sup> The Maternal Mortality Rate has also decreased from an estimated 490 per 100,000 thousands live births to 186 per 100,000 live births in the same period; however, this rate still remains among the highest in the world.<sup>5</sup> Similarly, Pakistan remains among the two countries in the world, along with Afghanistan, where polio is still endemic. The country also reports hundreds of thousands of malaria and also has high prevalence of other vector-borne diseases like dengue, grouping the country with Afghanistan, Yemen, Sudan and Somalia in this respect.<sup>6</sup>

These numbers are illustrative of systemic health issues. They also show in part why NCDs continue to escape the attention of policymakers –multiple other endemic disease continue to occupy resources and programmatic focus. However, while attention to these communicable diseases, infant and maternal mortality and nutritional defects must remain priorities, it is now undeniable that NCDs are becoming the predominant cause of mortality and morbidity in Pakistan, demanding a reorientation of policy.

Further, the class and regional distribution of disease trends also shows that social determinants play a role major in health inequalities, as 24.7% of Pakistan's population is below the poverty line of less than US \$1 a day and more than 83% and 70% of the women are illiterate in the bottom two quintiles, respectively. Inequities in health are therefore the result of many factors—social inequities, issues of access, and poorly performing healthcare systems.

## NCD burden in Pakistan

Non-communicable diseases are now the predominant cause of mortality and morbidity in Pakistan, accounting for approximately 58% of total deaths. NCDs constitute 6 out of the 10 most common causes of death in the country. Of these ischemic heart disease (IHD) is the most common cause of mortality, followed by stroke, Chronic Respiratory Diseases (COPD), diabetes, chronic kidney disease, and liver cirrhosis (See Figure 1).<sup>Error! Bookmark not defined.</sup>

Cardiovascular diseases (CVDs) are a major cause of mortality and morbidity in Pakistan, with 55% of NCD mortality attributed to them. Disability adjusted life years (DALYs) lost attributable to CVDs include IHD (5.4% DALYs), stroke (3.1% DALYs), hypertensive heart disorders (0.4%) DALYs and other heart disorders. Diabetes is also a major NCD in Pakistan, with the second National Diabetes Survey of Pakistan 2016-17 showing the age adjusted diabetes prevalence in Pakistan to be 26.3%. Pakistan reports approximately 1.1 million cases of COPD annually, which contribute to 5.5% of mortality and 2.63% of DALYs lost. The estimated prevalence of cancers in Pakistan is 4.05% and around 1 million new cases of cancer are diagnosed every year. Within cancer, breast cancer is the most common, with an estimated prevalence of 165 per 100,000 population. (GBD, 2019)

A Paper on NCDs in the Pakistan Lancet Series (2013) projected mortality rates from 2004 to 2025 following the methodology of Mathers et al<sup>7</sup> and Danaei et al.<sup>8</sup> Based on these estimates, deaths from CVD are projected to increase from 299,000 in 2004 to 461,000 in 2025, (54% increase) and due to cancer from 80,600 to 158,800 (94% increase).

### What causes the most deaths?

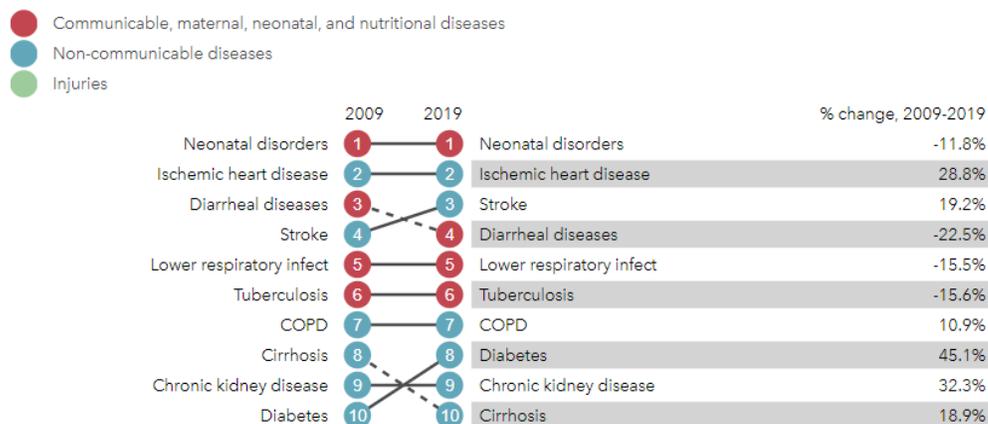


Figure 1 Top 10 causes of death in Pakistan and % change (2009-2019) (IHME, 2020)

## Economic Impact of NCDs

In 2005, a WHO sponsored study showed that Pakistan is estimated to have lost US \$ 1.72 billion of national income due to the burden of strokes, heart disease, and diabetes between 2005 to 2015. This estimate is projected to have increased significantly by now given current trends in development and disease burden, reaching \$5.8 billion by 2030. This, as proportion of GDP (0.6%) is worse than that of high income countries (0.1-0.2% in Canada and UK, respectively),

and still an underestimate as it does not include the income lost from long-term disability due to chronic disease, injuries and mental disorder.<sup>9</sup>

Furthermore, figures from the South Asia region indicate that catastrophic spending and risk of impoverishment are higher for those hospitalized with NCDs than with communicable conditions, and about 40% to 50% of expenses are financed by household borrowing and sales of assets.<sup>10</sup> Socioeconomically disadvantaged populations bear a large part of the brunt of NCDs as the two leading attributable risk factors for NCD deaths (hypertension and tobacco use) are more prevalent in these populations. Pakistan houses the sixth highest number of diabetic cases in the world; a quarter of all adults are overweight and obesity is rising in children in low income communities. The rising trend of NCDs poses a serious and imminent health—a crisis our health system is unprepared for.

## NCD risk factors

The leading risk factors for NCDs in Pakistan are tobacco use, low fruit and vegetable consumption, physical inactivity, dietary salt intake, high blood pressure and sub-optimal blood glucose levels.<sup>2</sup>

### What risk factors drive the most death and disability combined?

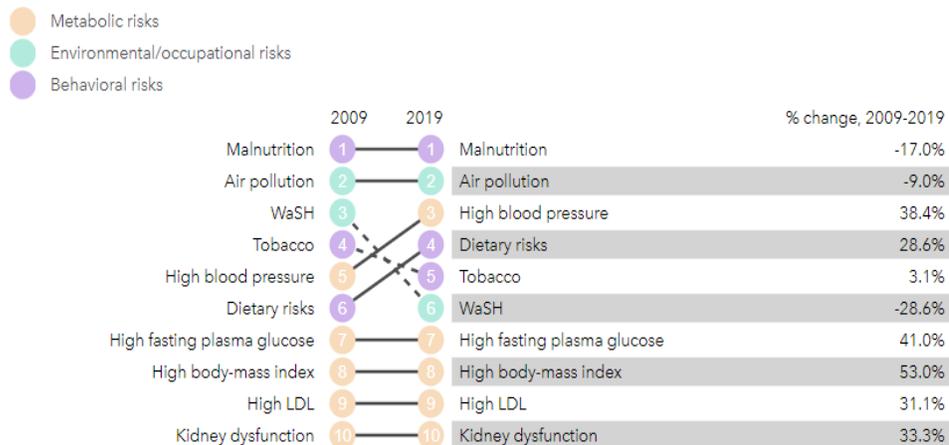


Figure 2 Risk factors driving death and disability in Pakistan and % change (2009-2019)

### Tobacco use

According to the STEPwise approach Surveillance (STEPS) 2014 survey, current smokers are 13.9% whereas 15.8% of the country smokes daily. The majority of these smokers are male (27.8%) whereas 4.2% are female. Prevalence of tobacco users is 18.2% (32.9% male and 8% female). The mean duration of smoking is 22 years (similar in both genders). 58% of current smokers have tried to quit smoking.

### *Unhealthy diet*

99% of the population do not meet recommendations of five servings of fruits and vegetables. Furthermore, about 95% of the population eats less than five servings of fruits and vegetables a day.

### *Physical inactivity*

Physical inactivity is more prevalent among women. 53% of women do not follow WHO recommendations on physical activity for health as compared to 25% of men. With advancement in age physical activity declines.

### *Obesity and overweight*

Pakistan is facing an obesity epidemic and is the 9<sup>th</sup> most obese nation in the world. The issue is more prevalent in children and women than in men. The figures are likely to double in coming years.

### *Air pollution*

The 6<sup>th</sup> NCD leading risk factor is air pollution. Pakistan's urban air pollution is one of the worst in the world and is fast increasing due to vehicular and industrial emissions. Cities such as Karachi which is the biggest metropolitan city are amongst the most polluted cities in the world.

## Health system and financing context:

Health care delivery in Pakistan has traditionally been jointly administered by the federal and provincial governments with districts mainly responsible for implementation. Service delivery is organized through preventive, promotive curative and rehabilitative services. The curative and rehabilitative services are being provided mainly at the secondary and tertiary care facilities (like Tehsil Headquarter Hospitals and District Headquarter Hospitals). Preventive and promotive services, on the other hand, are mainly provided through various national programs; and community health workers' interfacing with the communities through primary healthcare facilities (like Basic Health Units) and outreach activities.

According to Nishtar (2010) three health systems in Pakistan are 'vertical', in that they finance and provide services for specific a set of employees and their dependents and have a structure specific to them. The first of these is the system of the armed forces, funded by revenue and covers 6.18 million people. The second is the system of Fauji Foundation, funded by commercially generated funds and cover 9.10 million retired military servicemen. The third is the system of the Employees Social Security Institute, a health insurance program for low-paid private labour workforce. This covers 6.89 million people. Together, these three systems cover 14.12% of the population.

Two other health 'systems' in the country are horizontal. One of them is the system of the government's autonomous organizations, and the other pertains to the systems used by

commercial entities. Together these provide coverage to an estimated 4.14 million people. They either use insurance or reimburse for services used. These five systems cover 26.32 million people, which is 16.75% of the total population.

Outside these five—as described in Nishtar (2010) is the Mixed Health System with public and private providers. In the mixed health system, tax revenues fund over 7.77 million public employees and their families, with an additional number of people receiving assistance through safety nets and health insurance, such as the Sehat Insaf Card. Recently the government of KP has announced that their entire population will be covered under Sehat Insaf Card. This is yet to cascade into full operations and evaluations of its success at scale will take place over the coming years.

Governance issues and insufficient investment in health have long been challenges for the health sector. Pakistan is a federal republic and prior to 2010, its federal government had a major role to play in the health sector, despite health being a devolved subject even before 2010. After the 18th Constitutional Amendment promulgated in 2010, health became a provincial subject, and the role of the federal government was considerably scaled down.

Provincial governments thereafter were made responsible for making policy, allocation of the bulk of healthcare budgets, approving health laws, drug control, recruitment and human resource management, planning and program implementation. The federal government became responsible for the subjects' of health information, monitoring and regulation, health research and data, donor coordination, global health engagement, and federal health institutions.

The 18<sup>th</sup> amendment reversed the historical trend of federally centralized policymaking in health yet it was fraught with challenges from the start, as a hasty process, marked by a lack of sufficient preparation, as well as resistance to the process from within the federal bureaucracy, led to policy confusion for years. However, there have been welcome developments as well including increased budgets, deepening of inter-sectoral linkages, and integration of national programs on Maternal, Neo-natal and Child Health (MNCH), nutrition and family planning. Quality of services, for the first time, became a focus of policy making, even if progress is slow.

Public health expenditure in Pakistan is low compared to other countries around the world as governments have historically under-prioritized health spending in national and provincial budgets. **Pakistan spent a combined 1.3% of its GDP - 600 billion PKR (\$3.91 billion)<sup>1</sup> out of a GDP of \$284 billion<sup>11</sup> - on health in 2020-21 (including both federal and sub-national allocations).** Health expenditure continues to be dominated by out of pocket payments contributing between 60% and 78%, depending on the estimate while government revenues account for around 24% of health expenditure in Pakistan. Even when attending government facilities, a patient is required to cover costs and pay user charges.

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<sup>1</sup> Tabulated from Health department budgets of Punjab, Sindh, KP and Balochistan

## How much is spent on health - now, and in the future - and from which sources?

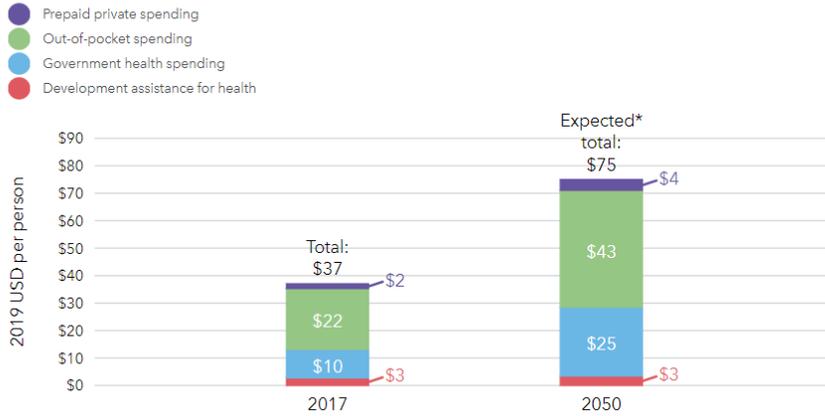


Figure 3 Breakdown of health spending in Pakistan (IHME, 2020)

However, since the 18<sup>th</sup> amendment there has been an uptick in government health spending while out of pocket spending has plateaued. Nonetheless, at current trends, OOP expenditure is projected to continue to form the bulk of health spending in the coming decades.

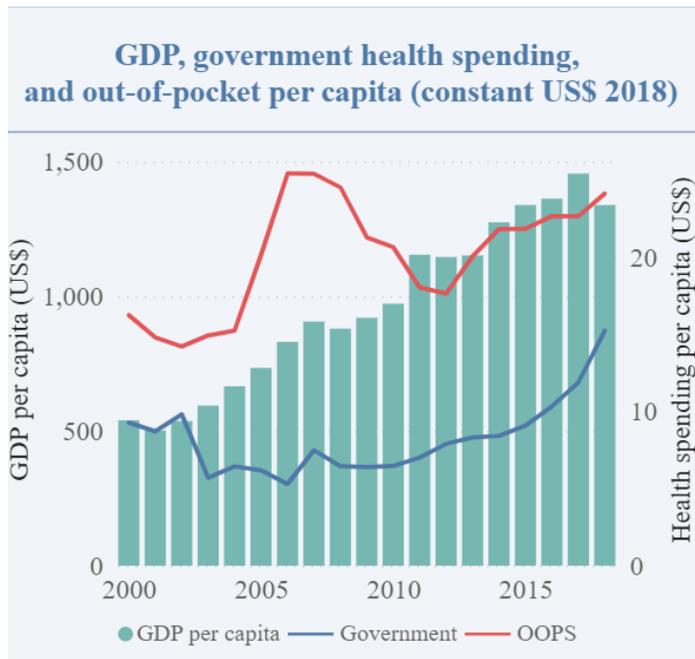


Figure 4 Government and out-of-pocket spending per capita in Pakistan (2018) (WHO 2020)

## NCD Prevention in Government policies and plans

During the last 20 years, Pakistan has had three national health policies. The 1997 policy aimed to address diabetes, cancer, road traffic injuries and mental health, whereas the following health policies failed to include NCDs.<sup>12</sup> Similarly, other collaborative pledges for national action on NCDs did not result in action.<sup>13</sup> In recent years, provinces have begun to roll out their own NCD programs and services, and a National Non Communicable Diseases and Mental Health Action Plan was been finalized in 2020. However, much of the response remains fragmented and disjointed, often occurring separately in thematic silos and jurisdictions. Resource mobilization and allocation for NCD prevention and control also remains significantly low.

### *National Action plan for the Prevention and Control of NCDs in Pakistan*

In 2003 an innovative public-private partnership was developed in Pakistan around non-communicable diseases prevention and control. The impetus for this came from the NGO Heartfile; the NGO's advocacy led to forging of a memorandum of agreement with the Ministry of Health, Government of Pakistan and the WHO Pakistan office, popularly known as the tri-partite agreement on NCDs. According to the terms of the agreement, Heartfile was assigned the task of developing a national strategy around the prevention and control of non-communicable diseases (NCD)s. This was the first time a 'National Plan of Action' was being developed in Pakistan around NCDs. A process was agreed upon and a range of consultations commenced to garner stakeholder inputs. The partnership delivered a strategic national plan of action – the National Action Plan for the Prevention and Control of Non-communicable Diseases and Health Promotion in Pakistan (NAP-NCD). The plan was an integrated approach to addressing the multifaceted issues relating to prevention and control of NCDs. It outlined both policies and actions in a life course perspective. It had a set of recommendations. It called for action at various levels—at the institutional level, community level and public policy level. Long before “multi-sectoral frameworks and whole of government action” were called for as a remedial measure for NCDs, the Pakistan NAP-NCD 2003 had factored those ideas in its framework. In many ways, NAP-NCD was ahead of its time. It factored integration at four levels: it grouped the 4 NCDs together, so that they could be targeted through combined actions; secondly it harmonized actions; third, it integrated actions with existing public health systems; and fourthly, it incorporated contemporary evidence-based concepts with the novel public health approach. The NAP-NCD had an Integrated Framework for Action, which was modelled to impact several indicators through a range of combined actions. Research objectives were embedded in its framework. The plan drew on the strength of public and private partners and its scope of interventions were built on sharing of responsibilities.<sup>14</sup>

The partnership had value for all three partners. The government could harness the technical strength of an NGO think tank. WHO, gained experience in working in a country model in which it was engaging with the private sector. After the Plan, work commenced to develop a national NCD surveillance system. A pilot commenced in 2003 in one district (Rawalpindi): its insights were to inform the population-based surveillance model of NCDs. Its results were published, and a World Bank/CDC/WHO joint study in 2004 recommended that it be scaled it, nationwide. Resource mobilization was a key contrast for this project and the NGO had to seek resources from CDC to complete it.

After the surveillance project, work on implementing NAP-NCD stalled. The National Action Plan for the Prevention and Control of Non-communicable Diseases existed for 20 years, but was not implemented in earnest owing to political instability and constitutional changes. However it did inspire every future endeavour in NCDs and many its elements were taken from the original document in subsequent plans.

### *National Commission on Prevention and Control of Non-Communicable Diseases*

The idea of a National Commission on Prevention and Control of Non Communicable Diseases in Pakistan emerged after the Asia Africa Summit on NCDs in 2009. However, after a year, while the establishment of the Commission was still being considered, the Federal Ministry of Health was abolished, and therefore the Commission could not be established. The abolition of the ministry was widely regarded as a regressive step for a number of reasons; but it was particularly a set back with regard to planning and institutionalization of NCD prevention and control.

### *Tobacco tax and control initiatives:*

Pakistan's efforts to curb tobacco use comprise its first attempt at population-level prevention of NCDs. The country's tobacco control efforts started in earnest in 2002 with the passage of the Prohibition on Smoking and Protection of Non-Smokers Health Ordinance 2002, which included measures to stop smoking in public places and included a ban on tobacco advertising. Pakistan adopted the Framework Convention on Tobacco Control in 2003, leading to periodic updates to the 2002 Ordinance to meet FCTC requirements. Graphic warning labels were increased to cover 60% of the front and back of cigarette packs. The law also prohibits the sale of smoked tobacco products within 50 meters of any school, university, or educational institution, as well as the sale of single cigarettes and small packets of cigarettes.<sup>15</sup>

Pakistan passed the tobacco taxation policy of 2013-2016 (reinforced by the tobacco industry pricing policy) which substantially increased cigarette prices and reduced tobacco affordability. Estimated cigarette consumption (licit + illicit) declined from about 70 billion cigarettes in 2014 to about 60 billion cigarettes in 2016. However, as tobacco excise taxes were reduced as a result of industry pressure in May 2017, cigarettes became much more affordable again and their consumption and sales increased. In 2018, the estimated total annual consumption was about 70 billion cigarettes again.<sup>16</sup> The current excise rates are still low at about 56% of retail price and tobacco prices in Pakistan remain among the lowest in the world.

### *Provincial NCD initiatives and plans:*

After some years of policy drift with respect to NCDs since the 18<sup>th</sup> amendment, provincial governments in recent years have begun to pay attention to NCDs as requiring separate policy and programmatic attention and have started the establishment of provincial NCD Units. However, most of these initiatives are as yet in the formative stages.<sup>2</sup>

In **Punjab**, the Primary & Secondary Healthcare Department (P&SHD) launched the "Prevention and Control of Non-Communicable Diseases Strategy, Punjab" in 2016 to mobilize provincial

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<sup>2</sup> As informed to the authors by representatives of the various provincial health departments.

financial resources required for implementation of NCDs screening, awareness and interventions for control of the diseases. The strategy emphasizes the use of innovative approaches to diagnosis and care; advocacy for increased attention; integration of NCD prevention and control into health care system; and activities to increase the availability of affordable essential medicines and technologies.

In **Balochistan**, the health department has formulated NCD policy guidelines under the Provincial Health Strategy 2019 and notified a focal person for NCDs, while programs are under development. Under the new Public Health Law, the Directorate General of Health Services (DGHS) will be restructured as the Balochistan Public Health Authority with hierarchical control over the divisional (DHS) and district (DHO) health services for health promotion and prevention programs (CDC, NCDs, MNCH, Nutrition, National Program for FP&PHC, etc.). The health department has begun to observe No-Smoking Campaign is celebrated in the province, the public places, Offices, School and Hospitals have been declared No-Smoking Zones, awareness campaigns are being started on NCDs and health lifestyles and sports.

In **Khyber Pakhtunkhwa**, an NCD unit has recently been established at the KP Health Department, with control activities including Diabetes treatment and awareness, free insulin provision, screening and life-style modification counselling, and a breast cancer prevention and control program. Most NCD activities in the province remain focused on treatment rather than prevention. Tobacco control remains a critical area for the province as the region most responsible for cultivation, with the presence of both the Pakistan Tobacco Company, Khyber Tobacco Company and multi-nationals like Phillip Morris. In December 2020, the provincial government received approval for a tobacco control roadmap meant to be incorporated into all health programmes under the Directorate of General Health Services guidance.<sup>17</sup>

Future plans include the development of a Provincial NCDs Prevention & Control Strategy, establishment of tobacco cessation clinics and community awareness for tobacco cessation and healthy lifestyles.

The **Sindh** province recently established an NCD Unit in its health department in July 2020. It is in the process of developing and rolling out its NCD programs at the time of writing this paper. As part of the Sindh Health Sector Strategy 2012-2020, the provincial government developed healthcare centres for NCDs in major urban centres of Karachi, Hyderabad and Sukkur. However, beyond periodic awareness campaigns, prevention activities are not yet the subject of policy attention.

#### ***National NCD and Mental Health Action Plan:***

At the time of writing this paper, the Ministry of National Health Services Regulation and Coordination (MNHSR&C) is in the process of finalizing a NCDMHAP as part of the government's efforts to achieve Universal Health Coverage (UHC). This plan is the culmination of a federal-provincial dialogue process that began in 2014. This process also included provincial level consultations, and a situation analysis for NCDs and their integration in 4 provinces. In 2018, an NCD & MH Task force and an NCD & MH Technical Working Group were formed to finalize the Action Plan and oversee its implementation. The NCDMHAP seeks to accelerate progress towards universal health coverage and strengthening governance, regulations and advocacy for reducing premature death and disease from NCDs. Promotion of healthy diets, physical activity

and tobacco control and air pollution (among other NCD risk factors) is among the main objectives of the Action Plan. According to the Action Plan, to achieve UHC targets an amount of US\$ 31.14 per person per year needs to be spent on implementing 39 NCD interventions through the UHC-BP/EPHS that will help avert 7.12 million DALYs.<sup>18</sup>

### *Policy action on Trans Fatty Acid elimination*

In recent years, Pakistani food authorities have begun to move toward the regulation of nutritional risk factors for NCDs like trans fats. In 2020, Heartfile researchers used the WHO's REPLACE framework for a situation analysis of TFAs in Pakistan's context by reviewing the literature on its dietary and industrial sources in addition to the legislative and regulatory context surrounding TFA related affairs in Pakistan.<sup>19</sup> The primary dietary sources of TFA in Pakistan are vanaspati ghee (partially hydrogenated vegetable oil), kinds of margarine, bakery shortenings and fat spreads, whereas their main producers are the edible oil, margarine, bakery and confectionary industries. In recent years, federal and provincial governments have begun to introduce TFA regulations like mandatory limits for food products (varying from 0.5% to 5% of total fat depending on the jurisdiction) and labelling requirements; however, these regulations vary across jurisdictions, which acts as an impediment to enforcement. Lack of stringent penalties for violation, a lack of public awareness and capacity and data gaps among regulators also impede TFA elimination. The analysis recommend multi-stakeholder efforts for harmonization of mandatory TFA limits and labelling, replacement of traditional vanaspati ghee, communication efforts for behavioural change, promotion of replacement oils and strengthening regulators' assessment capacities.

### Spending on NCD prevention and control:

Separating out NCD prevention spending in Pakistan's context is a challenge as healthcare is understood as an integrated service package, which may or may not be delivered on an organized programmatic basis. Provincial governments have only recently begun to allocate budgetary heads to the prevention and control of NCDs, and have not yet begun to separate spending on prevention within NCD expenditure. Sindh and the federal government have not yet allocated budgetary heads to NCDs within health budgets.

In the financial year 2020/21, the **combined provincial allocations for NCDs amounted to PKR 1,080 million which amounts to 0.18% of total health spending of PKR 599 billion** (See Table 1). While some of this NCD spending is for population-level prevention, a significant part of it also goes into service delivery and screening services, hence it is likely that NCD prevention spending is even lower. The vast bulk of public health spending is reserved for curative expenditure on communicable disease, CVDs, nutrition, maternal neonatal and child health in hospitals and other health facilities. This reflects the **low prioritization given to NCD prevention in government policies and budgets** despite increasing levels of government health expenditure relative to GDP in recent years.

Table 1 Federal and provincial NCD spending in Pakistan (2020-21)<sup>3</sup>

S#	Province	Annual NCD allocation (PKR million) (2020-21)	Total Health budget (PKR million) (2020-21)
1	Punjab	755.6	279,000
2	Khyber Pakhtunkhwa	200	124,000
3	Balochistan	125	31,405
4	Sindh <sup>4</sup>	-	139,180
5	Federal government	-	25,500
	Total	1080.6	599,085

## Discussion:

Pakistan’s NCD response needs to be viewed in light of its massive historical health challenges relating to infectious diseases, malnutrition and maternal and child health, which have continued to occupy much of the attention of policymakers. Over the last two decades, Pakistan has made numerous attempts to formulate an NCD program, with varying degrees of success. Part of the country response has been complicated by the decentralization of health following the 18<sup>th</sup> constitutional amendment in 2010, as well as a lack of institutional coordination mechanisms. Some areas such as tobacco taxation and control have however seen greater success.

### *Matching NCD spending with the disease burden:*

Despite the fact that NCDs increasingly account for the bulk of the disease burden and 58% of deaths in the country, NCD spending accounts for only 0.18% of total health expenditure in Pakistan. Further, the bulk of NCD spending is concentrated in outpatient care and funding for NCD prevention still barely registers and is not separately budgeted for in government expenditure. This suggests that most NCDs are being diagnosed late, leading to expensive specialized treatments (particularly for cardiovascular disease and cancers) instead of more cost-effective prevention and primary care services. Officials point to limited resources as among the main challenges of financing NCDs, with *“much of the health resource pool still dedicated to infectious diseases.”* This results in gaps in the NCD response from human resources to financial resources to physical facilities. The evidence from Pakistan points toward a need to allocate a far greater proportion of resources towards prevention and health promotion that can address underlying and variegated causes of the disease burden.

<sup>3</sup> Estimated from provincial and federal budgets and interviews.

<sup>4</sup> The Sindh health department informed the authors that no specific allocations were currently being made for NCDs but it planned to start from the coming fiscal year (2021-2022)

**Insufficient attention to nutritional risk factors:**

Food policies in Pakistan continue to focus primarily on malnutrition and under-nutrition, given Pakistan’s historical challenges with food security. This is also reflected in health programs, where nutrition programs have worked extensively on issues like food fortification and salt iodization but less on obesity, hypertension and other nutritional risk factors. According to health officials, “We have a double burden of malnutrition in Pakistan, but we are dealing with deficiencies only. We are not dealing with obesity, hypertension, etc., because of lack of attention and finance. The government’s initiative on NCDs is not there.”<sup>20</sup> This lack of attention is reflected in the rising rates of obesity, diabetes and hypertension in the country (Figures 5, 6 and 7). In the case of obesity, there is also a massive gender gap, with women facing obesity at more than double the rates of men, while men share a great proportion of the hypertension disease burden.

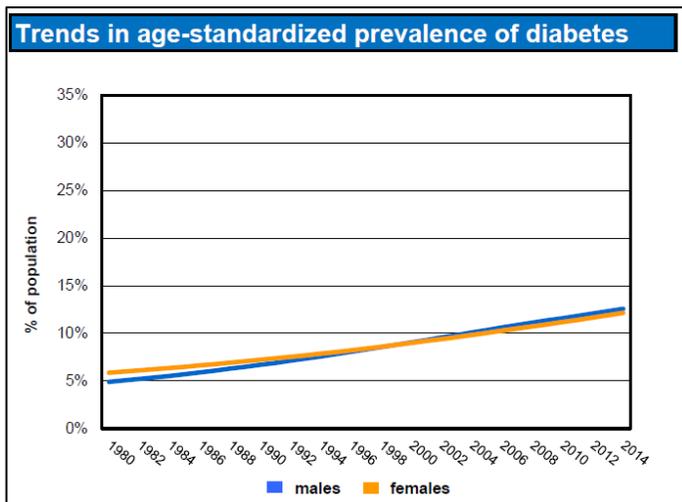


Figure 5 Age-standardized diabetes prevalence in Pakistan over time (male and female)<sup>21</sup>

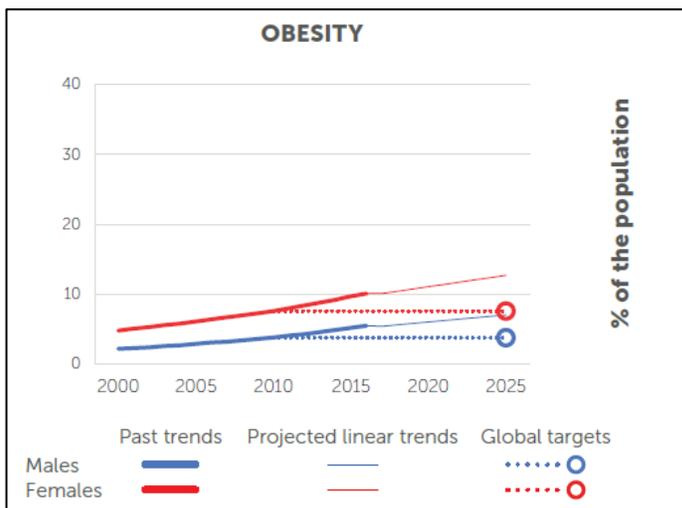


Figure 6 Obesity prevalence in Pakistan over time (male and female)<sup>3</sup>

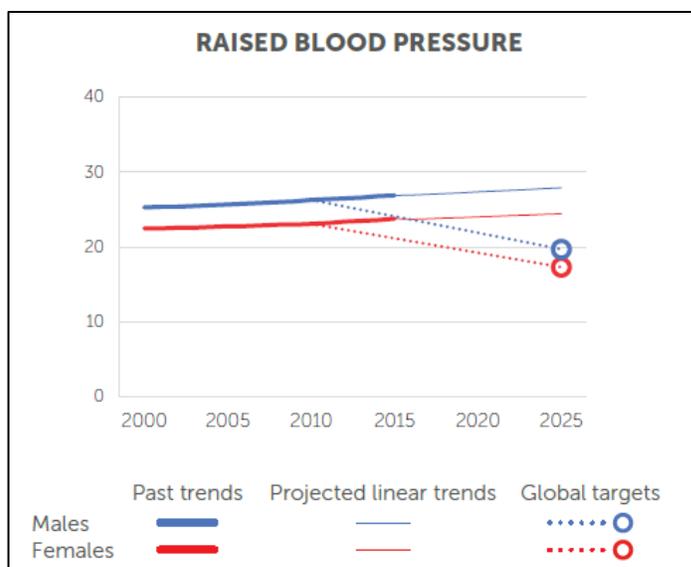


Figure 7 Raised blood pressure prevalence in Pakistan over time (male and female)<sup>3</sup>

Weak regulation of the food industry remains a major obstacle. Many food industries are not certified and there is a widespread lack of quality control. Pakistan’s food regulation infrastructure has only been developed recently and still suffers from a lack of clarity regarding federal and provincial mandates. Recently, a decision has been made to concentrate food standards at the federal level with the Pakistan Standards and Quality Control Authority while enforcement of food standards would remain at the provincial level. However, provincial food authorities continue to suffer from capacity and resource constraints, while regulatory capture also remains a serious concern.

Despite high levels of sugar consumption, no efforts to tax or regulate sugar consumption have yet been instituted, including for sugar-sweetened beverages (SSBs). Salt consumption in Pakistan is also far above WHO recommended levels, but no concerted salt reduction initiative yet exists in the country, whether at federal or provincial level. Labelling requirements also remain inadequate and weakly enforced.

Policy interference by the food industry has consistently sabotaged attempts to regulate its quality and contents, including through lobbying and legal efforts. Most recently, the vanaspati manufacturers association managed to successfully challenge the Punjab Food Authority’s attempts to ban the production of partially-hydrogenated vanaspati ghee in the Lahore High Court.<sup>22</sup> Soda manufacturers and the sugar industry have similarly managed to successfully wield political authority to circumvent any attempts to tax or regulate their products. Tackling Pakistan’s nutritional risk factors remains among the most critical yet unaddressed elements of the country’s NCD response.

***Institutions for multi-sectoral and inter-provincial action:***

Pakistan’s NCD response thus far has suffered from a lack of coordination across sectors and tiers of government. While this is a common problem across country contexts in LMICs, Pakistan’s case was exacerbated in particular by the messy decentralization efforts in 2010. The 18<sup>th</sup> constitutional amendment devolved complete responsibility for health service delivery to the provinces and momentarily abolished the national health ministry, which led to policy drift for

many years, leaving both the federal and provincial governments with no clear national direction on NCDs. For many years, this led to abandonment of NCD plans that were formulated prior to 2010 and also led to inertia and lack of coordination in the development of new provincial plans.

Recently, a Task Force and a Working Group on NCDs have been formed with representation from all provinces with the first task of finalizing the National NCD and Mental Health Action Plan. However, the institutional functionality and implementing authority of these institutions is as yet uncertain. Federal and provincial working groups for tobacco control have been similarly formed (or are in the process of formation) but are still operating in silos separate from other elements of NCD action.

Since the interventions required for addressing NCD risk factors are multi-sectoral by nature, it is important for formal, concrete and legally-rooted institutional mechanisms that can effectively coordinate, integrate and steer the NCD response. Instead of a fragmented response with multiple taskforces and working groups operating independently from each other, there is a need for a consolidated institution in the form of a national Centre for Prevention and Control of NCDs, which would have representation from all relevant federal and provincial government departments, WHO, research institutions, leading NGOs and service providers and be empowered to plan and execute strategies for NCD prevention. The Centre's objectives and activities would also need to be integrated with the Planning Commission, Education, Food & Safety Standards, Tobacco Control Unit, Nutrition Unit, Ministry of Finance, Agriculture & Trade, Municipal Planning, Road Safety & Transportation Department, the Ministry of Defence, professional societies, academia, and media for goal oriented, multipronged strategies. This mechanism could be further replicated at provincial and sub-national levels to guide NCD response implementation.

Other LMICs, from Jamaica to Mongolia, have managed to finance such institutions through revenues from taxes on unhealthy consumption like tobacco and alcohol. Pakistan could similarly attempt earmarking of its revenues from tobacco or potentially SSBs, in order to generate revenue for health promotion and NCD prevention (a proposal that has thus far been resisted by the Finance Ministry).

#### *Advancing tobacco taxation and control:*

The oldest and most well-developed aspect of Pakistan's NCD response thus far remains tobacco control, which has remained on the policy agenda since the start of the 21<sup>st</sup> century. Pakistan has increased excise taxes on tobacco over time, banned tobacco advertising on most media, placed formal bans on smoking in public places and taken steps to stop underage sales. To some degree, Pakistan has managed to arrest the growth of, even if not substantially reduce, tobacco consumption in this time. However, tobacco use continues to remain dangerously high (particularly for men at around 35% of the male population).

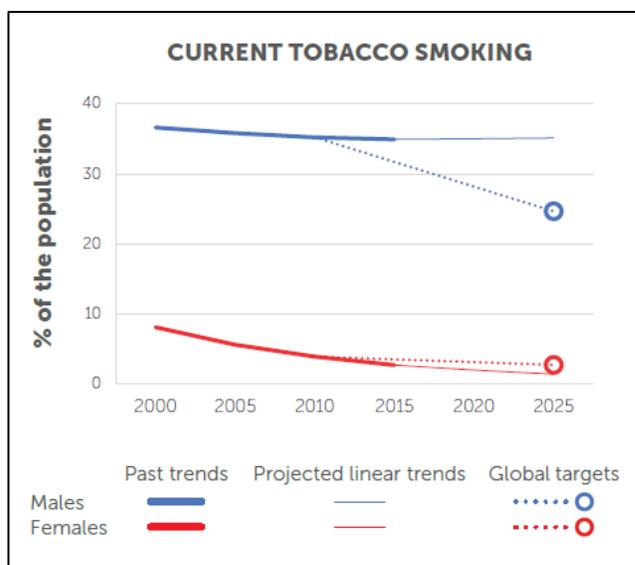


Figure 8 Tobacco consumption in Pakistan over time (male and female)<sup>Error! Bookmark not defined.</sup>

The biggest obstacle to effective tobacco control remain coordinated industry tactics to circumvent taxes and regulations through mechanisms like forestalling – increasing production in anticipation of tax increases – and price over-shifting beyond tax increases. In 2013, Pakistan introduced two specific excise tiers for tobacco and continued to increase excise tax till 2016, resulting in a nominal increase of 50% and real increase of 30% in tobacco revenue. This led to a decline in cigarette consumption (licit + illicit) from about 70 billion cigarettes in 2014 to about 60 billion cigarettes in 2016.<sup>16</sup> However, from 2016 onward, the tobacco industry reacted by reducing production (to 50% lower than previous years), with the result of decreasing nominal tobacco tax revenue by 27% and real revenue by 30% in that year. The industry’s plan was to convince the government to reduce the excise rate and this aim was achieved in 2017 with a decrease in excise rates. In 2018, consumption had returned to 2014 levels.<sup>16</sup> Similarly, concerns about tobacco growers livelihoods were used by the industry to avoid a healthy levy in 2020.<sup>23</sup>

These examples are a reminder that a consensus-based multi-sectoral approach is critical, in which all relevant ministries from health to finance to agriculture to trade and others develop a consensus-based strategy to increase tax and reduce unhealthy tobacco consumption. This approach would need to build consensus on economic benefits of reduced tobacco use and devise a concerted strategy to address livelihoods issues that could arise in case of additional taxes (such as, in the case of tobacco, by enabling production and export of alternative crops).

There is a need to annually increase the excise rates by at least 30% for lower-tier cigarettes and at least by 15% for the higher tier to ensure a sustained reduction in cigarette consumption and the growth of tobacco revenue. However, for this purpose, policies and monitoring frameworks will have to be devised to combat industry’s forestalling and tobacco smuggling. Further, action is needed for a comprehensive ban on Tobacco Advertising, Promotion and Sponsorship, as advertising and sponsorship regulations continue to be circumvented by the tobacco industry through creative means, including on social media. Smokeless tobacco, both traditional forms and new/novel products, also remains a cause for severe concern as it remains largely unregulated and untaxed.

### *Data and surveillance gaps:*

NCD data remains a serious problem in Pakistan, in terms of everything ranging from disease surveillance, risk factor surveillance to data on spending and financing. The last STEPS survey on NCD risk factor surveillance took place in 2014, and is still relied upon as the most recent baseline for policy planning and evaluation. There is very little disaggregated data available on regional, geographical, economic and social distribution of NCDs, with the result that provincial policymakers are unable to make contextualized policies. While a periodic National Nutritional Survey has been started, much of it remains focused on nutrition deficiencies rather than NCD risk factors. There is no mechanism that collects, consolidates and integrates data on NCDs from the primary level to enable real-time surveillance. Similarly, planners in finance and health departments do not disaggregate budgetary data in terms of curative and prevention spending, which makes it difficult to determine the cost-effectiveness of interventions. Pakistan urgently needs to overhaul its data and surveillance system for NCDs, potentially with the help of existing surveillance systems for communicable diseases, in order to be able to formulate and implement effective policies for NCD prevention and control. This needs to involve generating evidence on NCD burdens, dietary, behavioural and environmental risk factors, and spending and revenue related to NCDs.

### *Risk communication and health promotion:*

Among the most under-served element of Pakistan's NCD response are behavioural change communication, health promotion and healthy lifestyles. Physical activity among the population remains very low, with limited infrastructure in urban spaces for healthy physical activities and sports. Affordability remains a huge concern with often prohibitively expensive costs associated with services like gyms and other sporting avenues. There is very little practice of counselling for physical activity at all levels of health services. No mass awareness campaigns have been launched for reducing consumption of dietary risk factors like salt, sugar and trans fats. According to officials, *"for the majority of our community, to deviate from their acquired taste is very difficult... unless the person realises that instead of two spoons, they should use one spoon (of sugar), patterns will not change. Whatever law you pass, their implementation has to take place in the household."*

Enabling transformative lifestyle changes will require both concerted countrywide communication campaigns and investments in infrastructure and facilities needed to facilitate healthy physical activity, including sidewalks and improved enforcement for pedestrians and cyclists. Further, national and provincial campaigns for healthier lifestyles and consumption choices need to be designed and launched both through various forms of media as well as through workplaces, schools and public institutions. Other LMICs have adopted the 'Healthy Settings' approach to create healthier lifestyle habits using spaces like schools and offices as sites for intervention.

## Conclusions:

Pakistan faces a massive NCD burden, which continues to grow with time. NCDs like CVDs, diabetes, hypertension and cancers are among the main causes of mortality and morbidity in the country and increasingly form the reason for much of health spending and hospitalizations. However, Pakistan's health policy focus remains on communicable and nutritional defects, with almost no focus on population-level prevention of NCDs. While federal and provincial governments have begun to act to formulate a consolidated NCD policy response in recent years, there is a lot of ground that still remains to be covered for Pakistan to respond adequately to its NCD epidemic.

The fact that NCD spending in Pakistan accounts for only 0.18% of public health spending, and NCD prevention even less, is a major cause for concern, given the rising health and economic costs being imposed by NCDs. Furthermore, no tax revenue is currently being earmarked for any form of NCD prevention or health promotion. A WHO and NCD Alliance study found that risk factor reduction can result in 162,843 averted deaths from 651,372 deaths projected due to NCD deaths by 2025. The most substantial reduction in deaths was observed upon reducing the prevalence of tobacco use by 30%, and systolic BP by 5 mm Hg. Given the significant role of risk factors in contributing to the NCD burden, it is essential that investment on population-level NCD prevention and risk reduction is made that is commensurate with the returns and cost-savings that will result.

A lack of institutional coordination mechanism has also hampered Pakistan's NCD response. It is critical therefore, for there to be federal and provincial institutions for overseeing and guiding multi-sectoral action on NCDs. This can take the shape of a Centre for Prevention and Control of NCDs; one that is integrated with key departments, from planning to food safety to education and nutrition, includes participation from research institutions and leading NGOs, and is legally empowered to plan and execute low cost strategies for NCD prevention. While head-quartered centrally, a similarly modelled NCD Prevention centre can be established in each provincial health department to effectively take advantage of the devolution of health services in Pakistan. The provincial offices would be empowered to run their own initiatives through local resources, as well as pursue collective national targets and propose national activities. A line item budget should be allocated to the central office directly from the Department of Economic Affairs for national level efforts and competitive funding requests from the provincial offices. In addition to allocation from the national and provincial health budgets, other participating units, local philanthropic organizations and international donor agencies should provide a fair share of contribution to the proposed Centre and its programs. An independent board should be established for governance and oversight with appropriate representation of stakeholders.

These NCD centres should focus on high priority cost-effective legislative and health systems interventions aiming for targeted reduction in risk factor levels and NCD mortality rates, as well as establishing robust NCD surveillance systems. It is expected that building on the past experience of the government and non-governmental entities engaged in moving the NCD agenda in Pakistan, as well as similar examples from the region, are likely to yield promising results.

It must be recognized that the highest priority intervention for NCD prevention in Pakistan remains tobacco control, especially for the age group of 15-59 years. According to projections by the Disease Control Priorities Project (DCCP), price increase in tobacco by 33% costs roughly

between US \$4 and \$84 per DALY in low and middle income countries; this is the most cost effective options for NCD prevention and control.<sup>77</sup> Keeping in view this evidence, Pakistan must aim for relative reduction in smoking prevalence by 30% by 2025. The most effective way of doing this is through increase in excise duty of the cheaply sold cigarettes and imposition of additional health levies. Many other Asian countries have adopted similar approaches with impressive results.<sup>78,79,80</sup> As part of best practice, returns from excise duty and health levies on cigarettes should be earmarked for NCD prevention initiatives. In order to do all this, countering industry lobbying will be critical, for which strong partnerships between policymakers and civil society coalitions are needed.

Hypertension also remains a key risk factor that needs to be addressed for reducing mortality from NCDs. Data from Pakistan based on Control of Blood Pressure and Risk Attenuation (COBRA) Trial shows that effective interventions for CVD prevention can be delivered through the existing health systems infrastructure if private providers, non-specialist health professionals and community-based agents are all engaged.<sup>24</sup> Such a model for hypertension control costs around \$3.99 per hypertensive subject, \$0.43 per capita population annually, \$115 per CVD DALY averted at the policymaker level, and \$ 1226 per CVD DALY averted at the societal levels; hence it is potentially both affordable and cost effective.<sup>24</sup> The study proposes that the combined intervention by lay health workers and physicians trained in management of hypertension be up-scaled in Pakistan to aim for a target reduction in systolic BP by 5 mm Hg at a population level. Similarly, programs for diabetes prevention targeting high risk population need to be implemented at the primary care level.

Efforts for reducing the prevalence of overweight and obesity and encouraging health food choices and physical activity have been long ignored and need to be a priority. Evidence shows that youth-targeted and school-based interventions are more likely to have a sustainable impact on behavioural change and are recommended for LMICs by the WHO.<sup>84</sup> There is also a need for investment in infrastructure and facilities for physical activity promotion and national campaigns to encourage physical activity and healthier consumption habits.

Reduction of dietary salt through policy action on food industry is considered a high priority CVD preventive strategy by the WHO and should be adopted for Pakistan.<sup>85</sup> However, the major source of dietary sodium in Pakistan is the salt added while preparing meals at home or by small market and street vendors, and the consumption of processed foods is relatively low.<sup>19</sup>

Finally, the magnitude of NCDs is such that it demands major investment in human resources in Pakistan. Training programs could benefit tremendously from national, regional and international cooperation in capacity building efforts for quantitative and policy research in NCDs. These must be coupled with programmatic funding opportunities to attract and retain bright investigators in Pakistan. Low-cost NCD and risk factor surveillance, as well as implementation studies must be considered high priority areas for research. The Higher Education Commission, Pakistan, and all major public and private universities must make a concerted effort to allocate programmatic research funds for NCDs.

## Recommendations:

1. Increase spending on population-level NCD prevention to at least 2% of health spending.
2. Establish institutions for multi-sectoral NCD action at national and provincial levels, with dedicated budgets and representation from all key federal, provincial, academic and civil society stakeholders.
3. Conduct national and provincial communication campaigns involving the Ministries of Health, Information & Broadcasting, the nutrition cell in the Ministry of Planning and Development, and Sports, among others to create awareness around physical activity, healthy eating and cooking practices.
4. Increase excise tax on tobacco to FCTC-recommended 70% of retail price through graduated tax increases per year.
5. Enact and enforce comprehensive bans on tobacco advertising, promotion, and sponsorship, as well as on public smoking.
6. Carry out updated STEPS survey on NCD risk factors and establish real-time surveillance of NCD risk factors from primary to tertiary level by incorporating NCD variables in existing Health Information Systems.
7. Adopt food regulations that establish WHO recommended limits on salt and sugar content in foods and limit portion sizes of packaged foods and sugary beverages.
8. Institute WHO-recommended limits on trans fats (including limits of less than 2g per 100g of fat for all foods and a ban on partially-hydrogenated oil).
9. Formulate a comprehensive food and nutrition policy that enables access to healthy nutrient-rich food and reduces consumption of ultra-processed unhealthy food products.
10. Upscale hypertension and diabetes interventions that employ lay health workers and trained physicians and target high risk populations at the primary care level.
11. Ensure human rights and equity are mainstreamed in NCD policies to ensure greater accountability and gender-responsive, evidence-based and equitable outcomes.
12. Expand and publicly fund research on NCDs in the Pakistani context.

We are grateful to the advisory committee and the co-investigators of this study for reviewing the papers and for their comments: Sir George Alleyne, Beatriz Champagne, Douglas Bettcher, Robert Beaglehole, Rachel Nugent, Greg Hallen, Johanna Ralston, Yasser Bhatti, Ali Islam Ghauri and Ammar Rashid.

Funding and note: support from the International Development Research Centre (IDRC) Canada is gratefully acknowledged. This paper is part of a country case series. Details about the methodology adopted for the country selection and approach to case studies can be accessed here: <http://www.heartfile.org/pdf/Methods-section-for-the-case-studies.pdf>

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