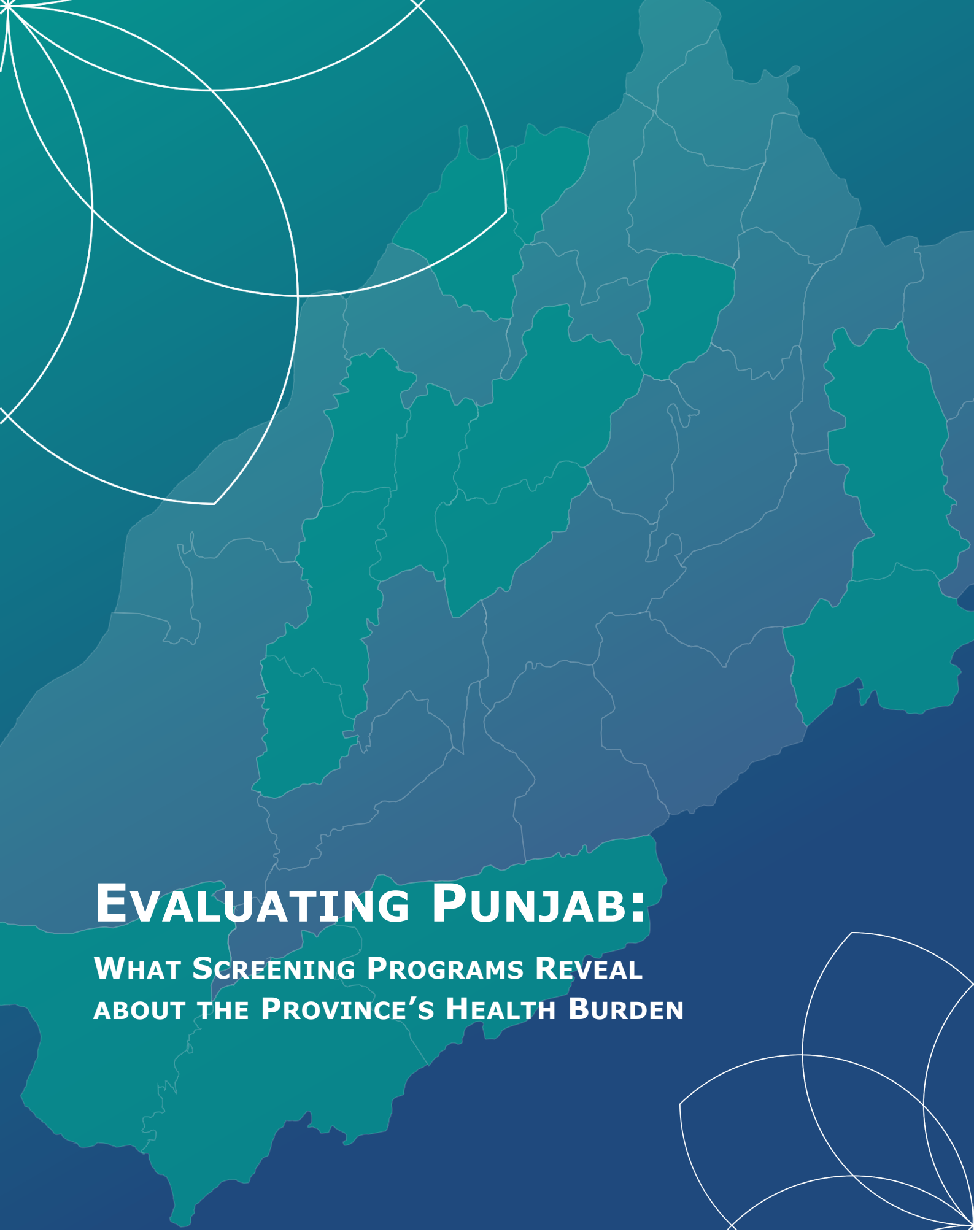


Evaluating Punjab:

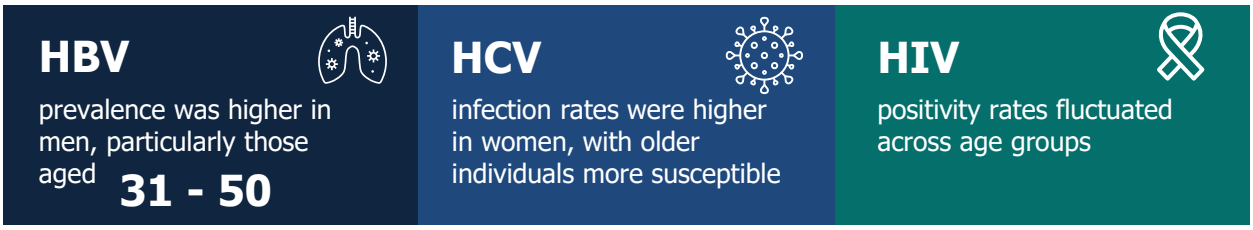
What Screening Programs Reveal about the Province's Health Burden

Global Evaluation Initiative

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Pakistan faces a significant burden of infectious and non-communicable diseases.



High prevalence rates of Hepatitis B (2.4%) and C (4.3%)—contributing to nearly two-thirds of the global viral hepatitis burden—underscore the critical need for improved healthcare infrastructure. Pakistan's role as a primary source of new Hepatitis C infections, accounting for 44% of global cases attributed to unsafe medical injections, further emphasizes this crisis. The escalating prevalence of non-communicable diseases, such as diabetes, hypertension, and obesity, further complicates the nation's health landscape, disproportionately affecting vulnerable populations.

The analysis of the administrative data[1] report provides an overview of the findings and recommendations arising from our collaboration with the Primary and Secondary Healthcare Department (P&SHD) in Punjab, Pakistan. We aimed to strengthen their Monitoring and Evaluation (M&E) system by analyzing data from the 2023 Integrated Health Week (IHW) and Special Needs Children (SNC) screening camps.

Design: The IHW screening camps, organized under the supervision and technical assistance of vertical programs at P&SHD were hosted in Basic Health Units (BHUs), Rural Health Centers (RHCs), Tehsil Headquarter Hospitals (THQs), District Headquarter Hospitals (DHQs), and civil and specialized hospitals. For SNC screening camps, the P&SHD assigned district Chief Executive Officers (CEOs) to oversee and engage teams of doctors and health professionals who conducted screenings for children with special needs in schools.

Around 927,000 people were screened at the Integrated Health Weeks in 2023, which took place in March and October. Overall, slightly over half of all patients screened were women, and the majority aged between 21 and 40. The data analysis calculated key indicators such as positivity rates for diseases and disabilities. Multimorbidity analysis and health index development captured individual health status across multiple conditions. To understand disease and disability patterns, trend analysis (over time), geospatial analysis (hotspots), and heterogeneity analysis (by gender, age, and severity) were performed. Secondary data[2] on labor force participation, poverty (Benazir Income Support Programme (BISP) eligibility), population density, urban proportion and presence of government programs (Lady Health Workers (LHWs), Punjab Health Facilities Management Company (PHFMC)) were incorporated to explore their association with disease prevalence.

Analysis and Findings: The analysis found that HBV prevalence was higher in men, particularly among those aged between 31 and 50. HCV infection rates were higher in women, with older individuals more susceptible. HIV positivity rates fluctuate across age groups. Both HBV and HCV infection rates showed statistically significant trends whereby they increased with age and then fell.

[1] Administrative data refers to information collected by the government as part of their routine operations. This data is typically generated for internal use, such as managing services or tracking performance of various programs.
[2]Secondary datasets utilized for the analysis were the Labor Force Survey (2020-21), Multiple Indicator Cluster Survey (MICS) 2017-18, BISP database, and the 2017 Census.

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Diabetes rates increased with age, peaking before declining in the oldest age group. Hypertension rates steadily increased with age, while obesity rates peaked at age 60. Women exhibited higher rates of diabetes and obesity compared to men.

Higher Education
levels were associated with lower HBV and HCV infection rates

Education levels influenced disease positivity rates. Higher education was associated with lower HBV and HCV infection rates, but not consistently for HIV, diabetes, hypertension, or obesity. While education showed a significant impact on HBV and HCV, its influence on other diseases was less pronounced.

Poverty, as proxied by BISP eligibility at tehsil level, was associated with higher HBV and HCV rates but lower HIV, diabetes, hypertension, and obesity rates. When combined with other factors, this impact was statistically significant in reducing HBV positivity and diabetes but increasing hypertension. This complex relationship suggests multiple factors influence disease prevalence.

Geographic disparities were evident. South Punjab had higher HBV rates, Central Punjab had higher HCV, HIV, and diabetes rates, while North Punjab had higher hypertension rates. Obesity rates were higher in both North and Central Punjab.

Government programs like the presence of the LHWs for community health services and the management of district healthcare facilities by PHFMC showed mixed results. PHFMC oversees the construction, maintenance, and improvement of healthcare facilities in urban and rural areas. There was improvement in diabetes and obesity rates in areas with LHW presence. Districts managed by PHFMC demonstrated improvement in blood borne and non-communicable disease positivity rates except diabetes. Interestingly, the analysis revealed no statistically significant impact of the LHW and PHFMC programs on positivity rates for aforementioned diseases once all other relevant factors were accounted for.

Population related factors influenced disease prevalence. Higher population density, lesser proportion of the population living in urban areas, and male-dominated populations were associated with higher HBV, HCV, and diabetes rates. HIV and hypertension rates were higher in tehsils with a higher urban population proportion. Obesity rates were linked to urban population proportion and female-dominated populations.

Multimorbidity analysis revealed a high co-occurrence of obesity and hypertension, and diabetes and obesity. Central Punjab exhibited poorer health outcomes as indicated by the health index. While the screening camps data provides valuable insights into disease prevalence in Punjab, it's important to acknowledge potential limitations. The camp-based screening may be non-representative of the general population due to factors such as selection bias introduced by only screening patients who visited the healthcare facility. Therefore, further research is necessary to confirm the generalizability of these trends.

Analysis of special needs children screening program: The special needs children screening program screened approximately 25,000, 33,000, and 47,000 children in 2018, 2022, and 2023, respectively, identifying five primary impairments: hearing, physical, visual, intellectual and speech development. Hearing impairment was most prevalent, followed by intellectual impairment.

Older children exhibited higher rates of hearing loss, visual impairment, dental issues, and speech disorders. Stunting and wasting were more prevalent among younger children. While boys were more likely to experience dental issues, ENT problems, visual impairment and intellectual deficits, girls were more susceptible to hearing loss and blindness. The gender wise patterns for speech impairment, stunting and wasting kept fluctuating over time. Multimorbidity, or the presence of multiple impairments was also studied to look at the severity of impairments. Hearing and speech impairments were the most common combination, affecting nearly 59% of children in 2022 and decreasing to 54% in 2023. The focus on school-attending special needs children limits the representativeness of the screening data to the overall child population.

Our analysis reveals distinct disease patterns across different population groups, necessitating tailored interventions. By equipping staff with data analysis capabilities, P&SHD can adopt a data-driven approach to optimize resource allocation, improve service delivery, and ultimately reduce the disease burden. To institutionalize this approach, robust monitoring and evaluation (M&E) practices and in-house capacity building are essential.

This report outlines immediate, medium- and long-term recommendations to improve the effectiveness of the screening programs and strengthen P&SHD's M&E system. By implementing these recommendations, including redesigning programs based on data-driven insights, conducting comprehensive assessment of existing M&E practices, and building human resource capabilities, P&SHD can enhance its ability to execute large-scale initiatives across Punjab and address public health challenges in the province.

Key Recommendations

Immediate or Short-term

1. Invest in HR capacity building for program management staff in the department
2. Enhance data collection tools to capture demographics like income level, occupation and geographic location up to village level
3. Develop a robust sampling strategy for future screening camps, including RHCs and BHUs
4. Implement a targeted outreach strategy for the underrepresented 14-30 age group
5. Launch education and awareness campaigns on blood-borne and non-communicable diseases, particularly targeting uneducated groups
6. Prioritize early childhood interventions and implement targeted nutrition programs in schools
7. Expand screening practices for visual impairments and address the underdiagnosis of speech disorders and other prevalent issues. Strengthen data collection on skin diseases to inform effective interventions

Medium-Term

1. Develop targeted screening programs for high-risk populations based on age, sex, education, and socioeconomic status and implement tailored interventions on regions with persistently high disease prevalence
2. Integrate diabetes education into LHW training programs to empower women with knowledge about the disease
3. Expand screening to out-of-school children to reduce screening disparity
4. Consider gender and age-specific interventions, and implement early detection programs for impairments like hearing loss and dental issues
5. Strengthen staff capacity for screening, diagnosis, and support services, including speech therapy, dental care, and mental health support
6. Augment screening programs with awareness campaigns and implement robust evaluation mechanisms to assess the effectiveness of these campaigns

Long-Term/System-Level:

1. Enhance surveillance and monitoring to proactively track disease prevalence trends
2. Implement effective screening and management programs for hypertension and diabetes and address the increasing prevalence of obesity, especially in high-density areas
3. Develop programs and policies to address gender disparities in diabetes and hypertension
4. Introduce occupational health measures in high-risk sectors to reduce blood-borne disease transmission
5. Expand access to healthcare services and early diagnosis opportunities in under-served areas
6. Leverage telehealth interventions like Sehat Kahani and DoctHERS to improve access to healthcare
7. Expand specialized services in schools, promote parental involvement, and raise community awareness regarding mental health
8. Expand access to speech and language therapy services, implement school-based dental care, and targeted support for children with hearing loss, skin conditions, and mental health challenges
9. Develop individualized education plans (IEPs) to address specific learning needs and reduce stigma around mental health and learning disabilities



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