Health Services and Epidemics in The Context of Recent Floods

Abdul Qadir Shah[1], Abdul Hadi[2], Abdur Rashid[3], Farhan Aslam[4], Farooq Ali Khan[5], Dr. Muqeem ul Islam[6]

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Abstract:

In the aftermath of the 2022 floods, the Health Department adopted a three-pronged strategy to address the crisis: restoring health facilities, coordinating with partners for a collective response, and monitoring disease outbreaks. As a signatory to the International Health Regulations (IHR) 2005, a collective response to outbreaks was necessary, leading to collaboration with organizations like WHO, UNICEF, and ICRC. Health facility clusters were established, and the government's strategy focused on Prevention, Detection, and Response. The department set up Provincial Disease Surveillance and Response Units (PDSRUs) and District Disease Surveillance and Response Units (DDSRUs) under the supervision of the DGHS and Deputy Commissioner. These units aimed to provide rapid action in case of outbreaks. This paper evaluates the operational gaps in health department responses, including monitoring, damage assessment, and surveillance of diseases. It critically examines leadership tenures and response effectiveness, offering conclusions and recommendations for improving health department operations.

Key words:

Flood response, Disease surveillance, Health facilities restoration, Provincial Disease Surveillance Units, Outbreak management

[1] *Pakistan Administrative Service (PAS), Email: mianabdulqadir737@gmail.com*
[2] *Provincial Management Service-KP, Email: hadi.akrsp@gmail.com*
[3] *Police Service of Pakistan (PSP), Email: sspabdurrashid@gmail.com*
[4] *Economist Group, Email: farhanaslam093@gmail.com*
[5] *AJ&K Council Secretariat, Email: farooqalikhan@gmail.com*
[6] *Chief Instructor, National Institute of Management Peshawar, Email: muqeemci@nipapeshawar.gov.pk*

Introduction

There is a great deal of pressure on the supply of healthcare services in flood-affected communities since epidemics and diseases of all types are frequently caused by floods. Pools of standing water that form as floodwaters subside can serve as mosquito breeding grounds, raising the risk of illnesses like dengue fever and malaria that are spread by the insects. As of September 15, 2022, Sindh province had reported at least 3,830 dengue cases, including 9 fatalities. This indicates that dengue cases in Pakistan had already increased. A rise in malaria, diarrhea, and skin diseases has also been noted by health professionals as a result of the flooding.

In Pakistan, ongoing illness outbreaks such as acute watery diarrhea, dengue fever, malaria, polio, and COVID-19 are worsening, especially in camps and areas where water and sanitation infrastructure has been devastated. Pakistan had already reported 4,531 cases of measles and 15 cases of wild poliovirus in 2022 before the significant rains and consequent flooding. The nationwide polio vaccination program has been hampered in impacted areas due to the rain and flooding (Web, Major Health Risks Unfolding Amid Floods in Pakistan, 2022).

After significant flooding, access to potable water is frequently a serious issue. Sewer backups brought on by flooding can contaminate drinking water and raise the risk of gastroenteritis, while filthy conditions and overcrowding in shelters can make matters worse (Geddes, 2022). Typhoid fever, rotavirus, norovirus, hepatitis A and E, and other illnesses are also linked to flooding incidents. Leptospirosis (Weil's disease), which is spread by coming into contact with rodent urine, can also develop from being submerged in or breathing floodwater, as well as skin or eye disorders.

The potential increase in aquatic illnesses is a major issue as well. In temporary camps, those who have fled the destruction are residing with little to no access to potable water. According to the nonprofit organization Water Aid, in some of Pakistan's most severely affected regions, 50% of all water, sanitation, and hygiene facilities have sustained significant damage, and hundreds of cases of dysentery have already been reported (Khan, Pakistan floods: health crisis of epic proportions. Doctor's Note, 2022).

Oral cholera vaccines and surveillance programs were being established in Pakistan prior to the floods due to an increase in cholera cases, particularly in the Khyber Pakhtunkhwa (KP), Sindh, Punjab, and Balochistan regions. However, many of these have been delayed since the floods hit.

People with disabilities may experience a decline in their health due to such disruption (Khan, Pakistan floods: A health crisis of epic proportions, 2022).

The Health Department of KP started responding immediately. The Khyber Pakhtunkhwa government planned a cholera vaccination campaign to prevent the spread of the acute diarrheal infection among flood survivors. Health officials told Dawn that the cholera vaccination plan had been approved, and people would soon begin receiving the oral cholera vaccine free of charge (Yusufzai, 2022).

Even though it might not be as fatal, losing a home, possessions, or one's source of income has a lasting emotional effect. This psychological cost is increased by the economic hardship related to rebuilding. In comparison to the direct health effects of flooding, mental health issues are frequently disregarded and understudied. In close collaboration with the Ministry of National Health Services, Regulations, and Coordination, WHO is stepping up surveillance for cholera, acute watery diarrhea, and other communicable diseases to prevent further spread. In addition, WHO is supplying vital medications and medical supplies to functional health facilities caring for affected communities (Web, Major Health Risks Unfolding Amid Floods in Pakistan, 2022).

There was a considerable gap in access to health services between rural and urban communities even before the current floods. These remote locations have proven challenging to reach. The World Health Organization (WHO) reported that more than 1,400 healthcare facilities had suffered full or partial damage, and that the key healthcare concern was still access to "health facilities, healthcare staff, and necessary medicines and medical supplies" (Khan, Pakistan Floods: A health crisis of epic proportions, 2022).

In the period of nine months, from January 1 to September 27, 2022, a total of 25,932 confirmed dengue cases and 62 deaths were reported in Pakistan, with 74% of these cases reported in September alone. On September 2, 2022, the Health Department of Khyber Pakhtunkhwa reported that waterborne diseases had started spreading in the flood-affected districts of the province, as cases of diarrhea, rashes, chest, and respiratory diseases among residents of the flood-affected areas were on the rise (News, 2022).

After the waterborne diseases, most of the flood-hit districts of Khyber Pakhtunkhwa (KP) were gripped by malaria and dengue, multiplying the miseries of flood victims who are yet to be rehabilitated. This happened despite repeated warnings from experts who had urged the provincial government and health department to take preventive measures (Tribune, 2022).

Problem Statement

Pakistan is a signatory of the IHR, 2005, which warrants a synchronized effort by the member countries. It calls for the development of core facilities in 19 technical areas, broadly divided into three groups: a) Prepare, b) Detect, c) Respond. This framework is applied in every disaster situation. Since Pakistan has subscribed to the IHR, 2005, it must give a befitting response to the international obligation by effectively addressing the crises arising from the flood situation. This is where the concept of the "One Health Approach" assumes international significance. Consequently, two vital pivots, PDSRU/PDSRC and DDSRU/DDSRC, were established. Since floods require a multi-sectoral response and the Health Department alone cannot tackle the situation that ensues from mega floods, a concerted effort was required to address gaps and propose ways for future policy interventions. Our policy paper will revolve around these two hinges, as espoused by the law.

Scope of Study

The policy paper aims to critically evaluate health services and epidemics in the context of the recent floods (2022) in KP. The study duration is from November 28 to December 12, 2022. Information and meetings with the Health Department will be held to gauge the planning, preparedness, and performance of health service delivery and epidemic management during the flood. The study will identify gaps and suggest a way forward for better provision of public health services as per the International Health Regulations, 2005.

Literature Review

One of the significant reasons for the sluggish industrialization in Pakistan is the prolonged absence of a dedicated industrial policy. Consequently, the roles such a policy would typically fulfill are being managed through other public sector policies related to investment, trade, and monetary matters. The SMEDA Act of 1998 was established to regulate small and medium enterprises (SMEs) by the federal government, followed by Vision 2025 (Burki, 2008). An SME policy was formulated in 2007, which has since been amended and is pending cabinet approval. The 18th Constitutional Amendment devolved Part I of the Federal Legislative List, including the industrial sector, to the provinces, transferring industrial affairs to provincial governments (MOIP, 2021). Frequent changes in government are a major contributor to policy uncertainty in Pakistan. Moreover, past governments have often implemented ad-hoc industrial policies in reaction to crises (Kemal, 2008). The conflict between federal and provincial industrial policies has further complicated the achievement of desired outcomes in the industrial sector (Burki, 2008).

The Pakistan Business Council advocates for a "Make-in-Pakistan" initiative to drive industrial growth, leveraging Pakistan's domestic market of over 200 million consumers to develop scale and competitiveness, eventually addressing global demand (PBC, 2018).

Research Methodology

The research method used in this policy paper is both qualitative and quantitative. We have relied on primary data collected from in-depth interviews with officials from the office of the Directorate General Health Services. A number of published research papers, along with newspaper articles, have also been considered.

Impact of Floods 2022

In late August 2022, Pakistan faced the most severe torrential rains, resulting in floods that displaced 33 million people, washed away villages and homes, destroyed infrastructure and standing crops, and damaged schools and health facilities. In KP, the 2022 floods fully damaged 10 health facilities and partially damaged 151. Additionally, 175 LHW health houses were fully damaged, and 331 were partially damaged (DHMIS, 2022). We can draw insights from this regarding the scope of the study and the statement of the problem.

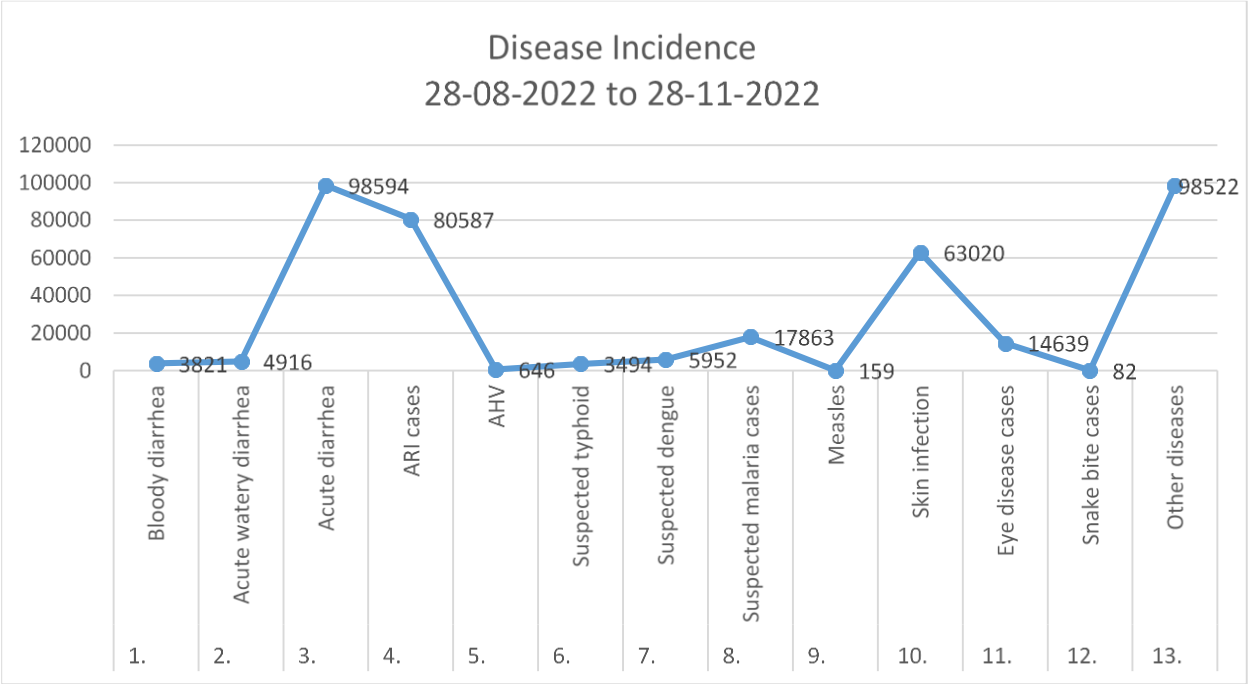
The other significant impact on public health was the outbreak of various diseases among the affected communities, as shown in the table and line graph below:

Table: Detail of Outbreak after 2022 Floods (as of 28-11-2022)

S .No.	Name of Disease	Number of Patients
1.	Bloody diarrhea	3821
2.	Acute watery diarrhea	4916
3.	Acute diarrhea	98594
4.	ARI cases	80587
5.	AHV	646
6.	Suspected typhoid	3494
7.	Suspected dengue	5952

8.	Suspected malaria cases	17863
9.	Measles	159
10.	Skin infection	63020
11.	Eye disease cases	14639
12.	Snake bite cases	82
13.	Other diseases (Body aches, weakness, muscle spasm etc)	98522

(DHMIS, 2022).



Source: IDSRS (Integrated Disease Surveillance Response System), Health Department Government of Khyber Pakhtunkhwa

Response of Health Department

The Health Department took the following steps:

1. Operationalized 24/7 flood emergency control rooms at the DGHS and across affected districts to timely assess and provide robust support to health-related interventions.
2. Emergency was declared by the Health Department through a notification on 1st September 2022, and the procurement process was relaxed.
3. Flood control rooms were established in the DOH office, linked with the DGHS office and line departments in the Deputy Commissioner office. Data was shared daily by the health department with PDMA, and a simultaneous linkage was established with NDMA and NIH.
4. Demand for supplies was generated from the flooded districts. The logistics and supply chain management section, which is at the disposal of the flood control room, kicked in.
5. Mobilized healthcare staff to aid on-ground public health interventions by establishing medical camps across flood-affected districts.
6. The Health Cluster (Health Working Group in the DGHS office), comprising UN agencies like WHO, UNFPA, UNICEF, and INGOs, was activated to identify areas of support and improve coordination to ensure HR deployment, emergency medicine supplies, and logistics support for immediate relief in flood-affected districts.
7. A Google sheet was developed and updated daily, showing the scope of work and work area allocation, thereby tracking the availability of essential medicines and supplies.
8. DGHS diverted 30-40% of the top-up stock toward flood districts, including supplies, medicine, and equipment.
9. Establishment of Mobile Field Health Camps, duly supplied with medicine, equipment, and human resources: doctors, paramedical staff, LHW (Maternal and Neonatal healthcare), and ancillary staff. The number of staff is proportionate to the population of the flooded area.
10. THQ and DHQ staff were strengthened to accommodate referrals.
11. The supply chain management, along with logistics and transport officers, distributed medicines among districts as per demand submitted to the DGHS office.
12. The medicine inventory of flooded districts was submitted to health working groups (INGOs, GIZ, ICRC, MDM, and UN agencies, who help in-kind only) who pledged different relief goods like medicines, transport, equipment, and mobile tent hospitals within timelines given by the DGHS office.

13. Malaria-specific Indus hospitals, an implementing partner of the Global Fund for Malaria, AIDS, and TB, have branches in every district in the form of Frontier Primary Healthcare, working closely with DHO. They use Rapid Diagnostic Kits for Malaria and microscopy.
14. A mass awareness campaign was launched by the DOH and DC regarding malaria and dengue by carrying out fumigation, Insecticidal Residual and larvicidal sprays, and Long-Lasting Insecticidal Bed Nets (LLINs).
15. The Integrated Disease Surveillance and Response system was mobilized at the DG office, with one District Surveillance and Response Unit in each district.
16. Data analysts uploaded disease trends and daily situation reports on DHIS-II, directly connected to the DGHS office, which then consolidated the sheets to measure disease trends and generate daily situation reports for the perusal of all line departments and health working group members, including the Chief Secretary.
17. The Field Epidemiology and Laboratory Training Program worked under PDSRU. They were activated to meet the challenge.
18. Connectivity was established with all stakeholders in the 18 flood-affected districts of KP, and they were made fully resourceful and authorized.
19. Data regarding damaged health facilities was collected, and DNA was carried out on partially, fully, and washed-away health facilities.
20. For the dispensation of health services, a demand was generated by the concerned health officer. The demand generated was uploaded by the data analyst on DHIS-II, directly connected to DGHS.
21. The Health Department created a health cluster (Health Working Group in the DGHS), including all UN agencies, where the DG is the Chairperson, and WHO is the co-chair. UNFPA, USAID, UNICEF, and INGOs also developed a 4 Matrix (who, when, where, what). A Google Sheet was shared on corresponding email addresses and WhatsApp groups with partners. Every partner knew the scope and mandate of the work assigned and the area allocated. The Google Sheet was regularly updated.
22. A National Flood Relief Control Centre (NFRCC) was established at the federal level by the Prime Minister of Pakistan, following the pattern of the COVID-19 NCOC. NFRCC has representatives from the federal and provincial governments and armed forces. It spearheaded flood control activities across the country. DGHS was requested to provide medicines and supplies to the government of Balochistan, as well as services, including four mobile health units with HR and medicines for four districts of Sindh. This was an acknowledgment of the befitting response of the DGHS office to the floods.
23. DGHS, KP extended services to 3,200 patients in four districts of Sindh.

24. Winter, Monsoon, and Heatwave contingency plans have also been chalked out to cater to the future needs of the province.

Health department services are already in place in the form of Provincial Disease Surveillance and Response Units (PDSRU/PDSC) and District Disease Surveillance and Response Units (DDSRU/DDSC). These two units were established in accordance with the provisions of The Khyber Pakhtunkhwa Public Health (Surveillance & Response) Act, 2017. Initially, these units conducted surveys and responded to the emerging situation. Additionally, top-up medicine stocks were available with the department to replenish supplies in the most affected districts by floods.

This policy paper aims to study the response of the health department to the emergency situation, the existing institutional setup, and identify gaps in the provision of health services during the recent floods. After thorough analysis using various analytical techniques, the research group will put forth recommendations for policy decisions by the government, resulting in enhanced public health service delivery before, during, and after natural disasters. The research group has carried out gap analyses in three aspects of the health department to find out gaps and propose ways to bridge them. These three aspects are:

1. Gap analysis of flood epidemics and surveillance.
2. Gap analysis of health services delivery.
3. Gap analysis of disaster needs assessment.

Analysis

Gap Analysis of Flood Epidemics Surveillance

	Current State	Future State	Gap	Actions to close gap
What	Disease Surveillance (PDSRU operational at provincial level and DDSRUs at district level)	Fully functional PDSRU & DDSRUs with one health approach (as per IHR 2005 Requirement)	1. Multi sector involvement 2. Notified Roles & Responsibilities with defined ToRs with measurable KPIs 3. Technical Capacities & support for Core Function 4. Financial Constraints	1. Fully Resourced PDSRU & DDSRU 2. Development and notification of roles, responsibilities with ToR and KPIs 3. Strengthening technical capacity and development of core team in PDSRU & DDSRU
Where	At provincial level and district level	At provincial level and district level	Multi Sectorial coordination	Focal person from all stakeholders with protected tenure for at least 03 years (through administrative decision)
When	Already in place (PDSRU/DDSRU)	3-4 Years	Not fully functional	Agreed upon Administrative, Financial, Political & stakeholders ownership
Who	Public Sector and Partners	Conversion from ADP to regular mode	Health department with Stakeholders	The Cabinet
How	Health to spearhead the process	Resources from the Health Department within 6 Months	By ownership, efficiency and accountability with transparency	Starting from severely flood affected districts

Gap Analysis of Disruption of Public Health Services Delivery

	Current State	Future State	Gap	Actions to close gap
What	Disruption of health service delivery in flood affected districts (Including Immunization, MCH, MNCH, OPD, Family Planning, nutrition and referrals)	Restoration of health services as per notified health care standards (EHSP) under HSS	1. Disruption in routine health services 2. Low accessibility to Health care services, medicine and equipment 3. Absence of purpose-built medicine warehouse	1. Provision of health care service through mobile health units/ camps 2. Reconstruction and Rehabilitation of Health Infrastructure 3. Supply of essential medicines & supplies to flood affected districts

Where	Roles & responsibilities of stakeholders	Well-defined and measurable roles and responsibilities	Well-defined job description of stakeholders	Improving health status of the flood affected population through provision of health service delivery (MCH, MNCH, Immunization, EPI, Nutrition and referrals)
When	Stop gap arrangement already made, essential medicines, vaccines and supplies already provided to flood affected districts	After restoration of health services	Immediate	Linked with rehabilitation and reconstruction of health facilities
Who	Health Department in coordination with C& W, P&D and Finance Department	District and provincial formations	Health department in coordination with stakeholders	Political executive
How	Phased manner, starting from Preparedness, response and reconstruction and rehabilitation.	Subject to availability of financial resources for restoration and rehabilitation of health care delivery services	Ownership of stakeholders and timely decision making	Initial restoration through mobile camps and stop gap arrangements. Restoration of health services by reconstruction of resilient health facilities.

GAP analysis of Damage Need Assessment (DNA)

	Current State	**Future State**	**Gap**	**Actions to close gap**
What	Damaged HF (10 FD, 151 PD, Reconstruction worth ~1.2 bn PKR)	Health infrastructure restoration and rehabilitation of services to pre flood state	Capacity of health dept. to provide public health services hampered	Detailed DNA through C&W or independent consultants based on a comprehensive framework of 4RFs i.e. Resilient, Recovery, Reconst. & Rehab. (Min of Planning, GoP for Donors Conference: BBB approach) Securing funds for reconstruction & Rehab (WB supported HCIP identified, re-appropriation underway, 10 m USD available)

				Partner support and pledges for rehab, UNICEF pledged for rehab in 19 health facilities.
Where	Across KP in Flood affected Districts	Reconstruction of flood resilient HF in flood prone districts	Technical Expertise for construction of resilient to hazards infrastructures in Health Department and decreased dependence on C&W	Amendment of RoB to allow 3rd party for DNA and Rehabilitation to improve quality, compatible with future needs e.g. Prefabricated structures etc.
When	28 Aug - 02nd Sept. 2022 (Health Emergency declared under Epidemic Control and Relief Act 2020 on 1st Sept. 2022). Still in vogue	when futuristic building code is implemented	by executing development project with 03 years throw forward liability	Services Restored, DNA conducted with cost estimation, ensuing processes in action.
Who	Health Department along with stakeholders	in coordination with PDMA, P&D and C&W and with the support of partners	Health Department in coordination with relevant stakeholders	Collective decision by Public, Legal, political leadership
How	In a phased manner from severely affected to least affected districts	PSDP, ADP and donors support, well before the onset of monsoon and after slack season	Effective stakeholders coordination, public dialogue and policy	(Political + Multi-sectorial) commitment

Critical Analysis

A devastating flood struck Khyber Pakhtunkhwa on August 28, 2022, leading to the declaration of an emergency on September 2, 2022. The flooding necessitated coordinated, multi-sectoral interventions. Numerous diseases and epidemics frequently brought on by floods put immediate pressure on the delivery of health services in flood-affected communities. As floodwaters subside, they leave behind pools of stagnant water, which can turn into mosquito breeding grounds, increasing the risk of mosquito-borne illnesses, including dengue fever and malaria. Health officials in Sindh province recorded at least 3,830 cases and 9 deaths from dengue as of September 15, 2022, indicating a spike in dengue cases in Pakistan. Additionally, according to health officials, the flooding has caused an upsurge in skin diseases, diarrhea, and malaria. Current disease outbreaks in Pakistan, including Acute Watery Diarrhea, Dengue Fever, Malaria, Polio, and COVID-19, are becoming more severe, especially in camps and areas with damaged water and sanitation infrastructure.

Before the intense rain and associated flooding, Pakistan had already reported 15 instances of wild poliovirus and 4,531 cases of measles in 2022. In impacted locations, the nationwide polio vaccination program has been hampered by the rain and flooding (Web, 2022). After significant flooding, access to potable water is frequently a serious issue. As a result of flooding, sewers may overflow, contaminating drinking water and raising the risk of gastrointestinal illnesses. Additionally, unsanitary conditions and crowded shelters may exacerbate the situation (Geddes, 2022). Khyber Pakhtunkhwa, Sindh, Punjab, and Balochistan provinces of Pakistan were experiencing an increase in cholera cases prior to the floods. Oral cholera vaccinations and surveillance programs were being established, but many of these were delayed when the floods hit (Khan, 2022). In Khyber Pakhtunkhwa, an emergency was declared on September 1, 2022, under Section 3 of the Khyber Pakhtunkhwa Public Health (Surveillance and Response) Act, 2017, to fill the gap created by the deluge in the delivery of health services as outlined in the Health Sector Five-Year Plan 2018-2023. The emergency declared is still in effect. Epidemics occur frequently globally and will only increase in the future. Where there is risk, there is also an opportunity. We should use our interconnectedness to better prepare, prevent, detect, respond to, and recover from public health events to address the challenges of building multi-sectoral partnerships. UNOCHA-Pakistan brings together humanitarian actors to ensure a coherent response to emergencies. It establishes a framework within which each actor can contribute to the overall response effort. In 2015, member states, partners, and donors requested WHO to establish a strategic partnership for health security: WHO-SPH (World Health Organization Strategic Partnership for Health). The SPH is a one-stop multi-sectoral platform that supports countries in accelerating the implementation of the International Health Regulations (IHR) 2005, thereby strengthening global health security. WHO-SPH offers member states, partners, and donors the opportunity to exchange best practices so that we can combat future epidemics, endemics, and pandemics effectively. Solutions to global health security lie beyond the public health sector, and what is unique about the platform is that it facilitates broad-spectrum collaboration between stakeholders. Moreover, it synergizes efforts between member states, partners, and donors. It enables countries to match their needs and gaps with the priorities of donors and partners. The SPH promotes four pillars of multi-sectoral partnership: a. Leadership b. Networks c. Resources d. Forum

The IHR, 2005, is a legally binding agreement among 196 countries to build the capacity to detect and report potential public health emergencies worldwide. IHR requires that all countries have the ability to detect, assess, report, and respond to public health events. It covers 19 technical areas, which can be broadly divided into three groups: Prepare, Detect, and Respond.

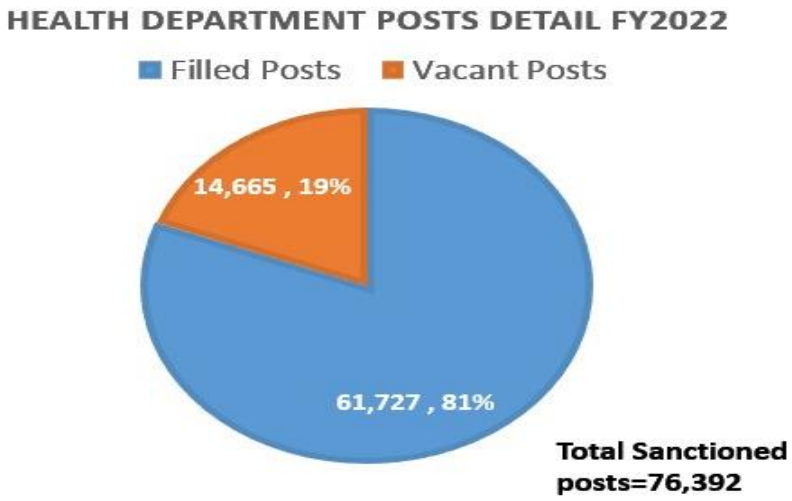
The regulatory framework of IHR calls for a "One Health Approach," embodied within the DDSRU and PDSRU at the district and provincial levels, respectively.

By addressing the shortcomings of the district and provincial response units, a major portion of the public health services delivery outcomes can be improved substantially. In this policy paper, we have applied the Pareto Principle, as bringing all dimensions of the health department into a single policy paper would be a gigantic task, beyond the mandate of our paper. When wants are unlimited and means are limited, we resort to prioritization. This can be achieved by identifying the vital few stakeholders, which in our case are the PDSRU/PDSC and DDSRU/DDSC. If we can address the issues (say 20%) of these two vital stakeholders, it will translate into 80% of the outcomes. For the implementation of IHR and the dispensation of a robust response, the "One Health Approach" is developed in the form of a Provincial Disease Surveillance Centre (PDSC) chaired by the Director of Public Health. At the district level, the District Disease Surveillance Centre (DDSC) is chaired by the Deputy Commissioner concerned. In these centers, all relevant government agencies at the provincial and district levels are represented. They generate a weekly bulletin providing guidance. The One Health Approach is difficult to accomplish in a country like Pakistan since there are no rules governing the formation of a public sector conglomerate at the district and provincial levels. This is the actual hurdle in the way of a coordinated and robust response. These two units, however, generate a weekly bulletin providing guidance. In the aftermath of the 18th Constitutional Amendment, health became a devolved subject. It has its own indigenous flood response mechanism with little or no input from the federal government. The Ministry of National Health Services, Regulation & Coordination has offered the provision of some life-saving medicines through the NDMA, for which lists have been sent via PDMA by the health department. Their response is awaited. A comparative analysis of the 2010 and 2022 floods has been carried out to show the evolution of the health department in tackling natural calamities over the course of a decade.

A comparative analysis between 2010 and 2022 Floods:

S.No.	Floods 2010	Floods 2022
1.	Response was haphazard.	Response was systematic.
2.	No DHMIS-II software available in 2010. Ineffective monitoring of disease trends.	An effective DHMIS-II system in place ensuring efficiency.
3.	Logistics Management & Information System (LMIS) not in place.	LMIS and Inventory management system in place.
4.	No telemetric equipment installed by Irrigation dept. in collaboration with the PDMA	Telemetric equipment installed at different locations along the rivers course to monitor flood water.
5.	No Integrated Disease Surveillance & Response Unit (IDSRU)	Integrated Disease Surveillance & Response Unit (IDSRU) in place in 2022 as per KP Public Health (S&R) Act, 2017.
6.	30-40% top up medicine stock wasn't available in 2010.	Available in DG health office prior to 2022 floods. DG health has centralized procurement from the last 03 years in addition to procurements by the MSs & DOHs. The impetus came from COVID-19.
7.	Health Dept. was a devolved subject operated from Account-4.	Health Dept. is provincial subject operated from Account-1.
8.	No Sehat Sahulat Card in vogue	Sehat Sahulat Card throughout KP
9.	Budget of the Health Department: 18.34 billion Rs.	Budget of the health Dept. 205 billion Rs.
10.	Staff position in 2010: 42,522	Staff position in 2022: 76,392
11.	Lower & Upper Kohistan, Chitral lacks medical officer.	Same as before. Medical Officers like to serve only in Peshawar for service and pursuit of higher degrees.
12.	Lack of warehouse facility where temperature and humidity is controlled.	Still prevalent and medicine are stored in EPI warehouses.
13.	Health department wasn't held in priority by the then political government.	Health is the most favorite flagship department of the political government.
14.	Many dysfunctional health facilities at the districts level	Dysfunctional facility turned into effective ones through PPP. Caesarian are carried out in Razmak and Dasu.

The total sanctioned strength of the health department in 2010 and 2022 is exhibited in the pie chart shown below which show substantial increase in the human resources. This is partly due to the political ownership of the health department and due to merger of the erstwhile FATA into the province of Khyber Pakhtunkhwa. As far as 2022 is concerned, the total sanctioned posts, filled and vacant posts are known while in the year 2010-11 only sanctioned posts could be traced from the Financial Management and Implementation Unit of the finance department government of Khyber Pakhtunkhwa. This information about the human resources is followed by the tenures in offices of the Secretaries health department (0.8 years) along with the Director General Health Services (0.9 years).

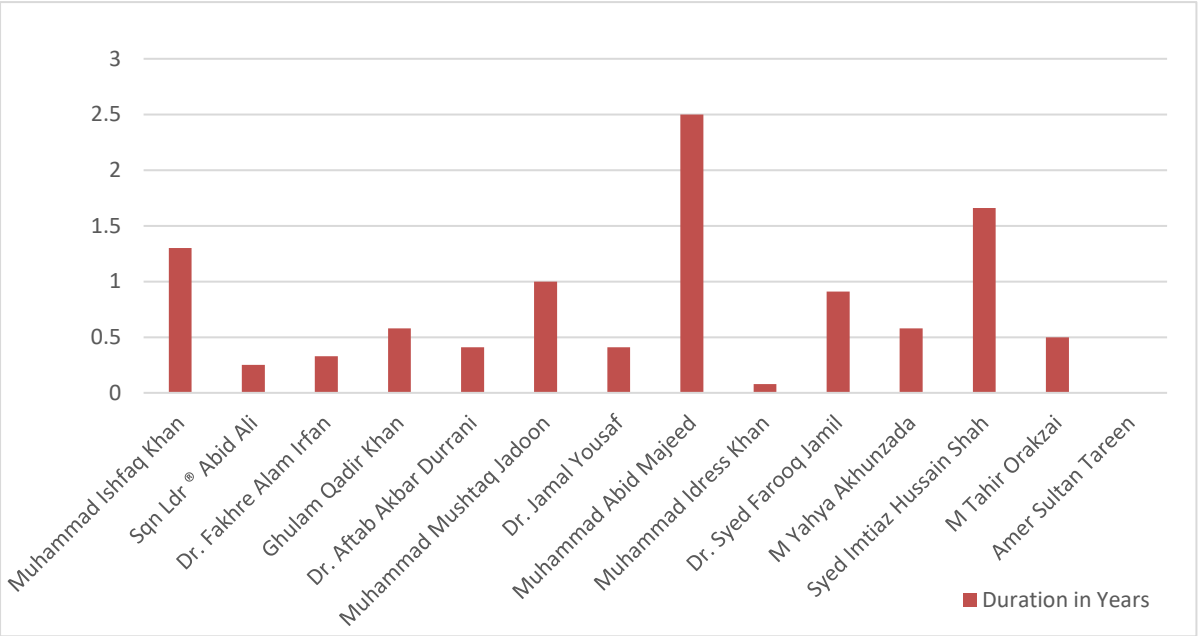


Total Sanctioned Posts in 2010-11 were: 42,522

Secretaries Health Tenure (2011 till date)

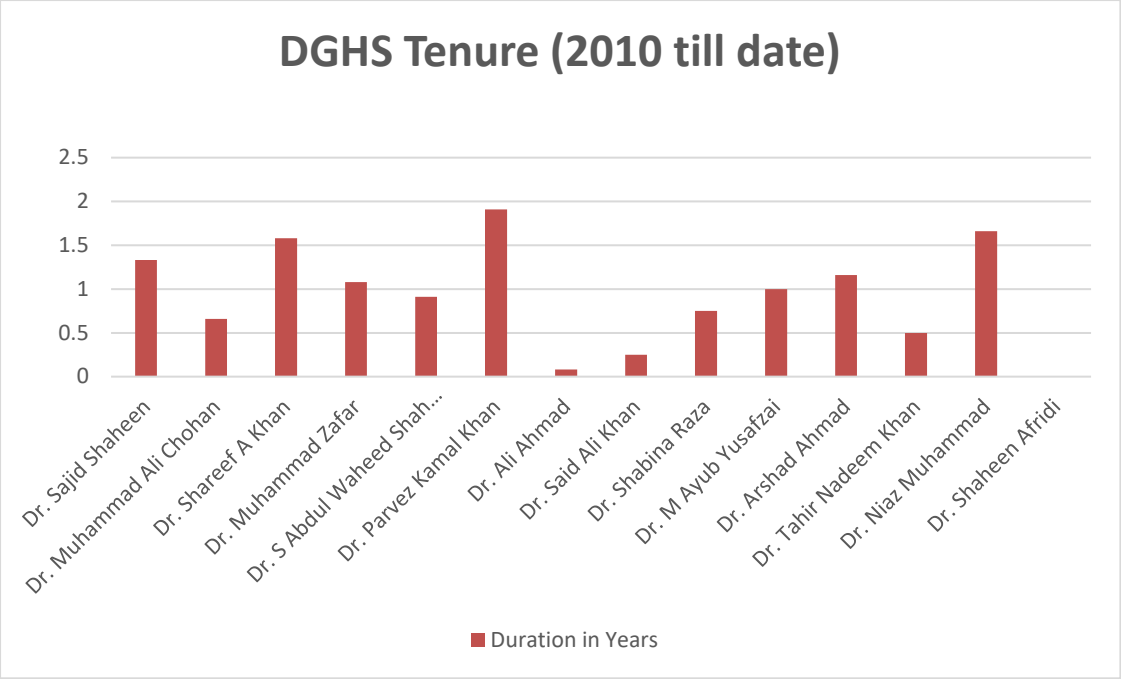
S. No.	Name	Tenure From – To		Duration in Months	Duration in Years
1.	Muhammad Ishfaq Khan	09-12-2011	08-04-2013	16	1.3
2.	SqnLdr ® Abid Ali	08-04-2013	03-07-2013	03	0.25
3.	Dr. Fakhre Alam Irfan	05-07-2013	08-11-2013	04	0.33
4.	Ghulam Qadir Khan	08-11-2013	11-06-2014	07	0.58
5.	Dr. Aftab Akbar Durrani	12-06-2014	17-11-2014	05	0.41
6.	Muhammad Mushtaq Jadoon	20-11-2014	04-11-2015	12	1
7.	Dr. Jamal Yousaf	04-11-2015	17-03-2016	05	0.41
8.	Muhammad Abid Majeed	17-03-2016	06-09-2018	30	2.5
9.	Muhammad Idress Khan	06-09-2018	18-10-2018	01	0.08
10.	Dr. Syed Farooq Jamil	06-11-2018	02-09-2019	11	0.91
11.	M Yahya Akhunzada	02-09-2019	03-04-2020	07	0.58
12.	Syed Imtiaz Hussain Shah	04-04-2020	27-12-2021	20	1.66
13.	M Tahir Orakzai	29-12-2021	27-05-2022	06	0.5
14.	Amer Sultan Tareen	30-05-2022			
15.	**Average Tenure of Secretary during the last 10 years**				**0.80 years**

Secretaries Health Tenure (2011 till date)



DGHS Tenure (2010 till date)

S. No.	Name	Tenure From - To		Duration in Months	Duration in Years
1.	Dr. Sajid Shaheen	30-07-2010	27-03-2011	16	1.33
2.	Dr. M. Ali Chohan	28-03-2011	05-09-2011	08	0.66
3.	Dr. Shareef A Khan	05-09-2011	18-04-2013	19	1.58
4.	Dr. Muhammad Zafar	19-04-2013	12-02-2014	13	1.08
5.	Dr. S Abdul Waheed Burki	13-02-2014	16-11-2014	11	0.91
6.	Dr. Parvez Kamal Khan	28-11-2014	24-10-2016	23	1.91
7.	Dr. Ali Ahmad	25-10-2016	04-12-2016	01	0.08
8.	Dr. Said Ali Khan	05-12-2016	02-02-2017	03	0.25
9.	Dr. ShabinaRaza	03-02-2017	25-10-2017	09	0.75
10.	Dr. M AyubYusafzai	26-10-2017	22-10-2018	12	1
11.	Dr. Arshad Ahmad	23-10-2018	16-01-2020	14	1.16
12.	Dr. Tahir Nadeem Khan	17-01-2020	15-06-2020	06	0.5
13.	Dr. Niaz Muhammad	16-06-2020	26-02-2022	20	1.66
14.	Dr. ShaheenAfridi	07-03-2022			
Average Tenure of DGHS KP					**0.99**



Conclusion

Floods in 2022 resulted in a notable spike in waterborne diseases, including acute watery diarrhea, skin, and respiratory infections. IDSRS data from the health department illustrates a high incidence of acute diarrhea, acute respiratory infections, and skin infections in the aftermath of the floods. Dengue fever cases were on the rise, as flood relief camps were densely populated, thereby providing an impetus for the spread of contagious diseases. The high incidence of waterborne diseases demonstrates that the provision of clean drinking water was an insurmountable challenge for the health authorities. The IDSRS data does not provide information on leptospirosis, which is caused by potable water coming into contact with cattle and rodent urine. The oral cholera surveillance program was hampered by the floods, leading to a disruption in the administration of the cholera vaccine. Mental health issues arising from the destruction of homes have been disregarded and understudied throughout Pakistan. IDSRS and access to health personnel in remote areas remain a challenge. The data also does not provide information about deaths caused by epidemics, which presents a utopian view that contrasts with the ground realities. Since snake bites were frequent in the districts of Tank, Nowshera, and D.I. Khan, they need to be provided with sufficient antivenom before the onset of the next monsoon. A top-up stock of medicines and supplies, to the tune of 30-40%, needs to be maintained in the DGHS office in the future as well.

The response to the 2022 floods was better due to the installation of telemetric equipment on the course of rivers by the PDMA with technical support from the irrigation department. In the health department, the improved response to the floods can be attributed to IDSRS, PDSRU, DDSRU, coherent efforts by line departments, and the top-up stocks of medicines and supplies maintained by the DGHS

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