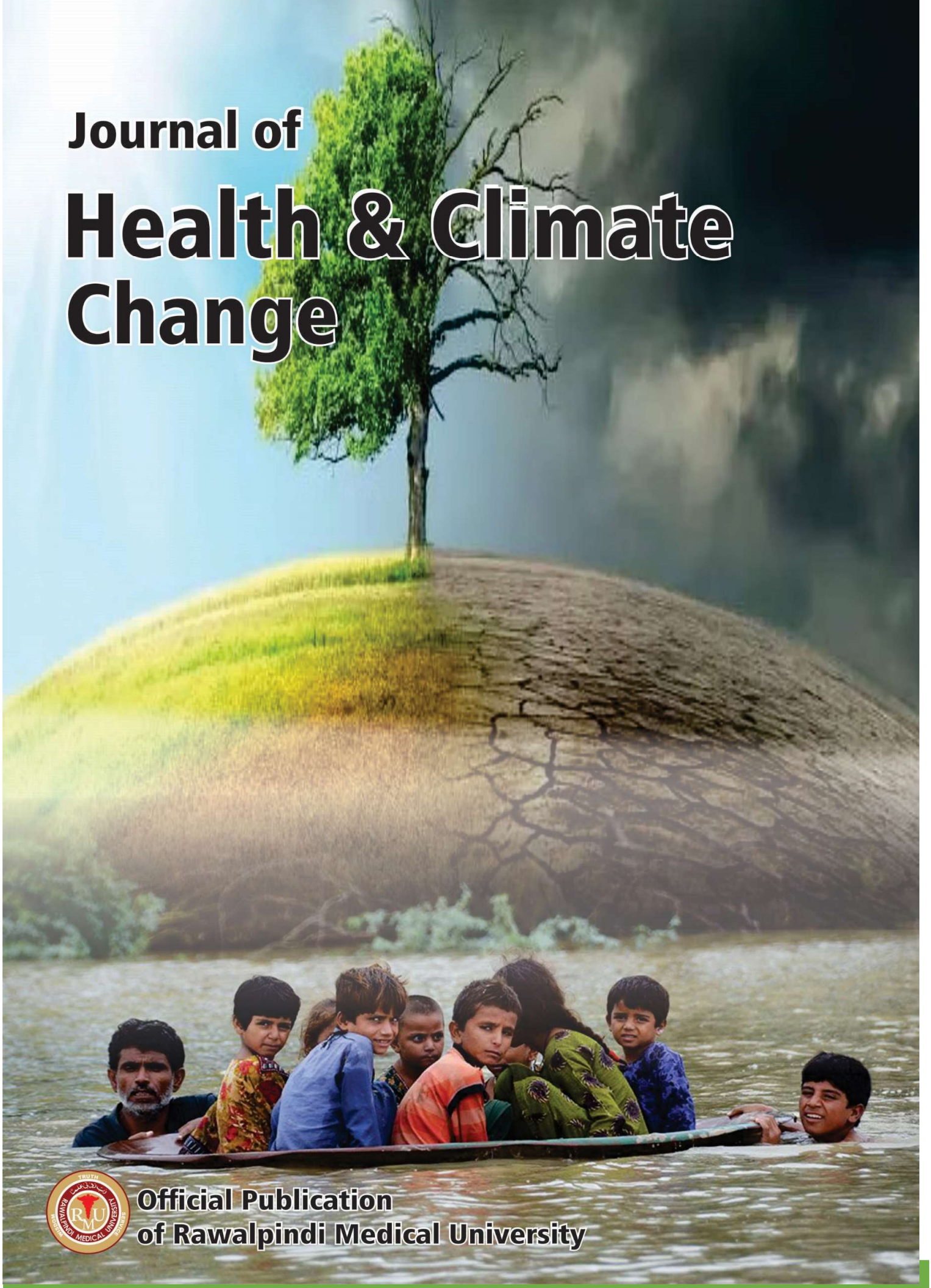
Journal of Health & Climate Change



Official Publication
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Editorial Board

Editorial:

Research Articles:

Flood in Pakistan – A Devastation

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The worst flooding in Pakistan's recent history has been sparked by the recent monsoon rains, which have wiped out whole communities and put over three million children at danger of waterborne infections, drowning, and hunger.

The death toll has risen to 1,200, and it includes almost 400 youngsters. Many public hospitals, water treatment plants, and educational institutions have also been damaged or destroyed.

Supporting the government's efforts, Rawalpindi Medical University (RMU) is distributing clean water, essential medicines, therapeutic foods, and hygiene kits to children and their families. We are also helping to preserve and restore the emotional health of children who have been uprooted by the recent floods.

However, much more work is required to guarantee that all flood-affected households get the assistance they need to recover from this climatic tragedy.

Heavy monsoon rains this year in Pakistan have caused severe rains, floods, and landslides, affecting almost 33 million people, including around 16 million children. Homes, farms, and essential infrastructure including roads, bridges, schools, hospitals, and public health facilities have been destroyed as a result of large rivers overflowing their banks and dams failing.

At least 18,000 educational institutions have been impacted by the floods. A third of girls and boys in these communities were already not in school before the crisis, and now they face the prospect of even more interruption to their education after two years of epidemic school closures in the previous few years. Diarrhea, water-borne disorders, respiratory infections, and skin problems have already been documented.

As heavy rains continue in previously flooded districts, the already dangerous humanitarian situation is anticipated to deteriorate in the days and weeks ahead. Many of the worst-affected regions are also some of Pakistan's most impoverished, with children living in places with high rates of malnutrition and little access to clean water and sanitation. Many health care employees have lost their houses, and public health facilities have been damaged or destroyed in most of the impacted areas. Cholera and other waterborne infections are a serious concern.

Extreme weather events will not have the same impact on all populations. Children, especially in low-income areas, will be hit worse than adults.

When a disaster comes suddenly, like an earthquake or a storm, it is the youngest and most vulnerable members of society that feel the effects first and longest. Loss of life, property damage, and the disruption of regular life are only the beginning of the problems that might arise as a result of an emergency. Mothers and children often lack access to basic medical services and supplies, including those that might save their lives. Malnutrition rates skyrocket, as a result. Children are especially vulnerable to water-borne infections because of the loss of sanitation and hygiene services that might occur when a community's infrastructure is damaged. When schools are damaged, children risk losing their sense of security and regularity.

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development/2020/jul/27/how-climate-change-intensified-the-floods-in-pakistan

Climate Change and Floods

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Introduction

There are other elements that may influence the frequency and severity of floods, just as there are with other types of severe weather events.

No part of the planet is immune to the recurrence of devastating floods at any time of year. However, scientists warn that it is impossible to determine whether or not a specific flood was caused by climate change due to a lack of historical data, especially for the rarest and most intense floods.

It's easy to blame global warming for all natural disasters, including floods. Even while climate may have an effect on the weather, weather is not climate. It is well accepted amongst scientists, for instance, that climate change increases the frequency of extreme heat events. There is little certainty that severe tornadoes are a result of climate change.

Climate scientist Daniel Swain from the University of California, Los Angeles, puts floods in the middle of the confidence range between heat waves ("yes, obviously") and tornadoes ("we don't know yet"). My response would be "yeah, probably, but..."

Like other catastrophes, flooding may be affected by several causes, some of which may work against one another. Drought intensification due to climate change is becoming a major factor in several recent storms.

Why do we get floods, and what factors contribute to them?

Precipitation, snowmelt, terrain, and soil moisture all play major roles in flood formation. Some aspects could be more important than others, depending on the kind of flood.

A river flood, often called a fluvial flood, is the overflow of water from a river, stream, or lake. This typically happens after a period of severe rainfall or rapid snowmelt. When high tides and heavy rains meet, they may overwhelm low-lying coastal regions and cause flooding.

Even in the absence of any readily accessible bodies of water, flooding is always a possibility. In instance, flash floods may occur anyplace that receives a large amount of rainfall in a short amount of time.

What factors are used while determining flood levels

Stage height (the elevation of river water above a certain point) and flow rate are two common ways to quantify the severity of floods (how much water passes by a specific location over a particular time period).

The phrase "100-year flood" is often used by experts to characterise a flood that has a one percent probability of occurring in any given year and is thus very unusual. However, the phrase "likely" just describes the possibility and does not constitute a guarantee. There may be two floods of the "once per 100 years" kind in an area within a short time frame.

Have floods become more often in recent years?

Not quite. There is little question that climate change has amplified heavy precipitation occurrences, but, surprisingly,

this has not been accompanied by an increase in flood events.

Climate change is increasing the frequency and severity of catastrophic flood occurrences while lowering the number of mild floods, according to research published in Nature in 2021.

Enhanced evaporation rates accelerate soil drying as temperatures rise. For the more typical and mild floods, the early soil moisture levels are crucial, since drier soils may be able to absorb the majority of the rainfall.

According to Manuela Brunner, a hydrologist from the University of Freiburg in Germany and the study's main author in 2021, "since there's so much water that the soil wouldn't be able to absorb all of it, anyhow," the initial soil moisture becomes less important with greater flood episodes. Dr. Brunner warned that adding water after the soil was already wet would cause it to flow off and exacerbate flooding.

In the "business as usual" scenario, where people continue warming the world with greenhouse gas emissions at the present pace, scientists are convinced some forms of floods will rise.

Primarily, rising sea levels will exacerbate the problem of floods around the shore. The ocean becomes bigger as it warms and as glaciers and ice sheets melt, adding to its overall volume.

Second, if the frequency of severe precipitation events increases, so too will the frequency of flash floods. When temperatures rise, more water molecules evaporate into the air, where they might eventually fall to the ground as precipitation or melt as snow.

Floods will occur more often and with more intensity as the climate warms, according to studies, and their arrival times are expected to decrease as a result. Greater intense floods can do more damage.

An increasing number of times, severe flash floods may follow massive wildfires as a result of a chain reaction of climatic catastrophes. This is due to the fact that forest and plant life are lost in wildfires, which in turn causes the soil to become compacted and less porous.

Andrew Hoell, a meteorologist at NOAA's Physical Sciences Lab, has observed that when strong rains fall over land that has been burned by fire, the water "does not be absorbed by the ground surface as efficiently as it previously did."

Despite the seeming incongruity, it is becoming more frequent to find both extremes—too much fire and too much water—in the same place. This is especially true in the American West.

How widespread is the flooding?

Recent study published in Nature suggests that states in the Northern Rockies and Northern Plains may see more frequent flash floods in the future.

According to Zhi Li, the 2022 study's principal author, this might be problematic for flood mitigation measures since local governments would not be aware of the future flash flood danger.

Dr. Li said the tendency is being driven by snow that melts sooner and more quickly. More "rain-on-snow" floods like the ones that swept through Yellowstone in June might occur in regions at higher latitudes.

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RMU Medical Camps and Floods in Pakistan

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Introduction:

Pakistan is a country that has often been affected by natural calamities such as floods. Whenever a flood strikes, people are left stranded without any access to basic necessities. Medical camps play a vital role in these floods by providing healthcare facilities and emergency assistance to the affected individuals. This study aims to explore the impact of medical camps in floods, specifically in Pakistan.

Methodology:

This study is based on medical camps conducted by Rawalpindi Medical University (RMU). A thematic analysis approach was utilized to provide an in-depth understanding of the scale of medical camps held for the flood affectees in Pakistan.

Results:

Pakistan is among the countries that are frequently affected by monsoon floods. In August 2010, Pakistan witnessed a massive flood that killed over 2000 people and affected more than 20 million individuals. Medical camps played a significant role in these floods by providing immediate healthcare facilities, aid, and relief to the affected people. By setting up medical camps in flood-affected areas, doctors and medical professionals could readily identify and treat diseases such as diarrhea, dehydration, and malaria that often occur in these conditions. The medical camps helped save many lives, particularly those who could not afford medical treatment. These camps helped in decreasing the burden on the already over-stretched public health system of Pakistan.

Discussion:

Medical camps have become an essential element of emergency response in floods. When floods strike, medical camps can provide immediate relief, leading to saving lives and reducing the short- and long-term effects of flood damage. Medical camps have a significant impact in reducing the burden on the healthcare system by providing preventive measures, such as vaccination drives and public education, to prevent the spread of waterborne diseases. These camps can also help in assessing the nutritional status of the affected population and provide dietary supplements to ensure their optimal health. Medical camps also provide psychosocial support to traumatized individuals who may have lost their loved ones, homes, or personal belongings.

Conclusion:

Medical camps have a vital role to play in floods in Pakistan or any disaster situation. They provide timely healthcare facilities, aid, and relief to the affected population. Medical camps not only help in saving lives but also reduce the burden on the healthcare system. They also provide much-needed psychosocial support to traumatized individuals. Therefore, it is crucial to ensure that medical camps are well-equipped, staffed with trained medical professionals, and properly funded to deliver the best possible healthcare facilities in emergency situations.

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Medical Camp Statistics

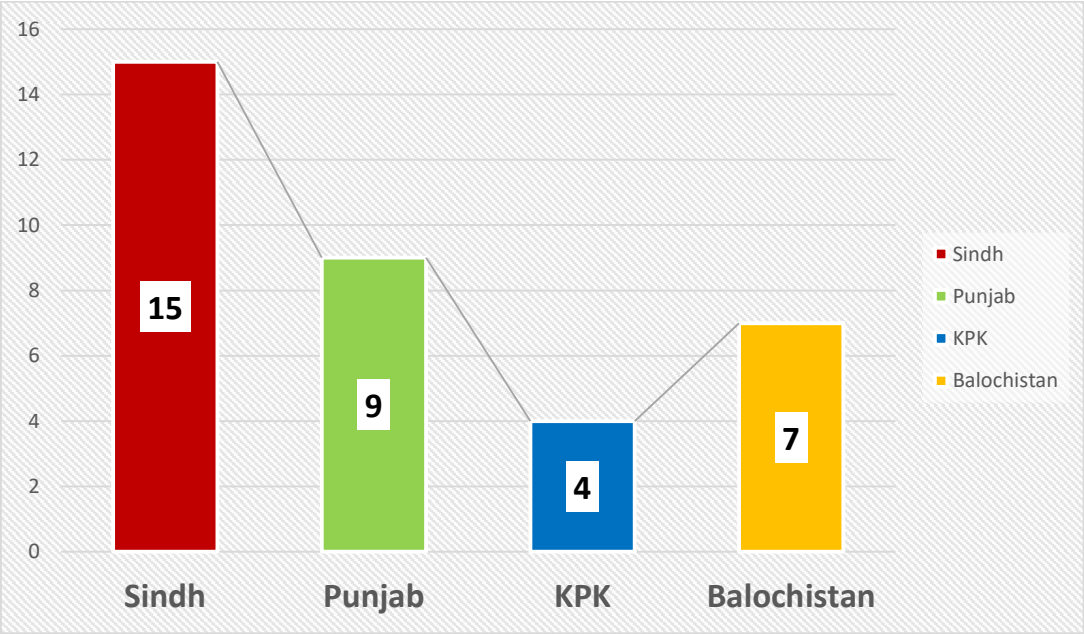

Figure-1: **Distribution of Medical Camps Province-wise**

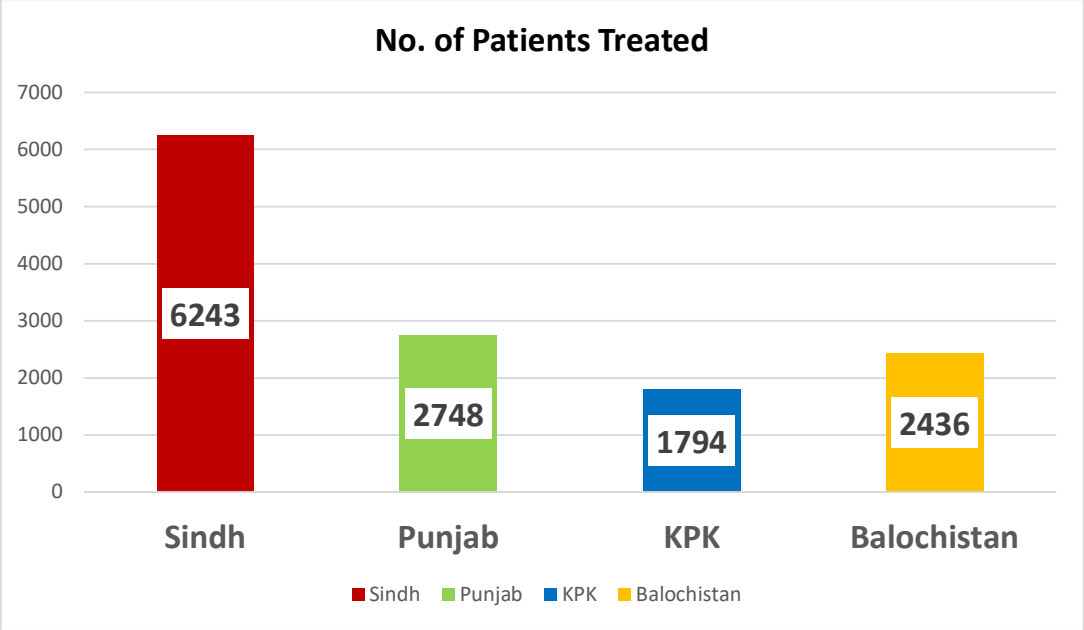

Figure-2: **Total Number of Patients Treated**

Medical Camp Statistics

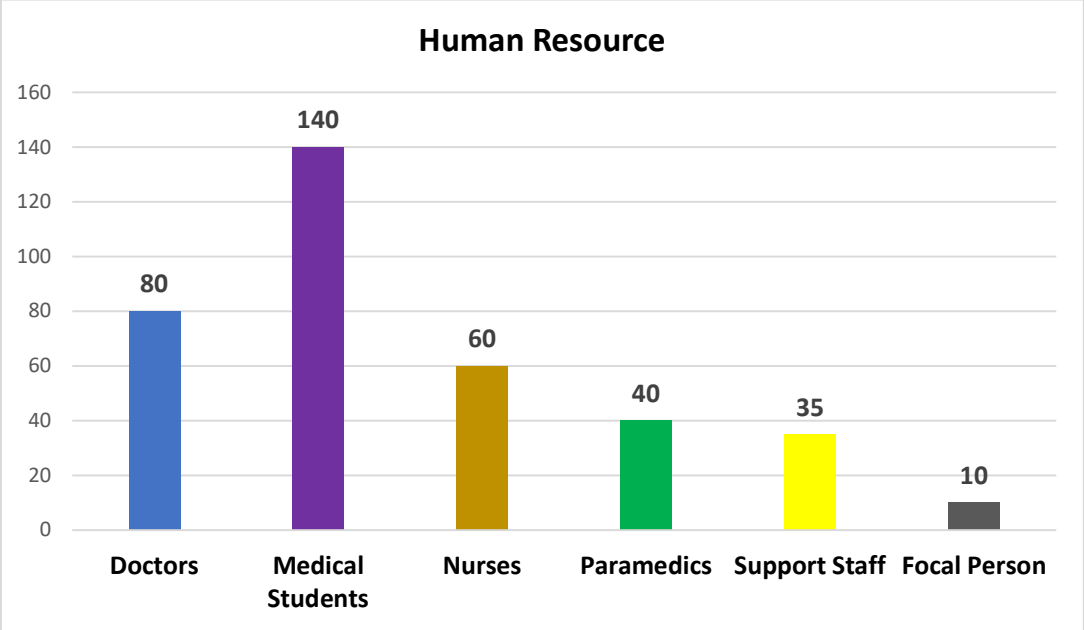

Figure-3: **Details of Human Resources involved in Flood Medical Camps**

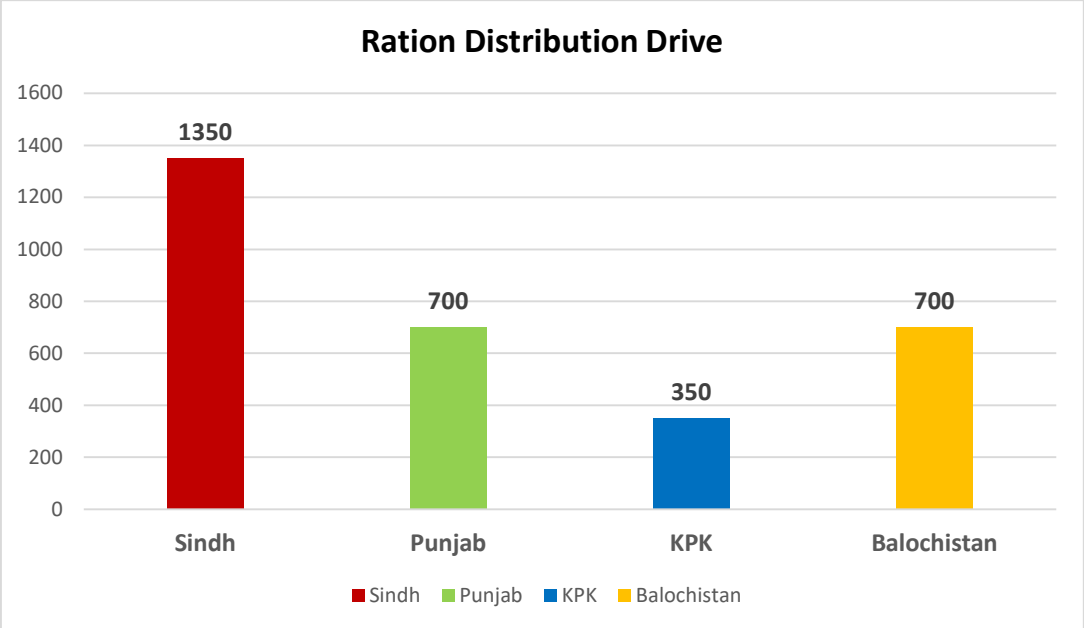

Figure-4: **Distribution of Ration in Families Province-wise**

Medical Camp Statistics

RMU teams immediately responded to this humanitarian missionary call and dozens of doctors, nurses, medical students of RMU reached to Rajanpur, Hasalpur, Faazalpur, Hajipur and Taunsa within a short span of two days.

Province of Punjab:

Taunsa:

		DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Fam-ilies	Clothes	Other items cakes	Processed food	Water bottle
TAUNSA	CAMP 01	25.08.2022	MANGROTHA LAKHANI	350	50	300	GASTRO URTI PYODRMA FUNGAL INFECTION OTHERS	30 35 25 05 05	50	50	200	600	600	300
	CAMP 02	25.08.2022	KACHAL KACHI BASTI	800	150	650			100	100				
	CAMP 03	26.08.2022	KACHAL MOZA JHANG NORTH	100	27	73			50	50				
	CAMP 04	26.08.2022	KACHAL MOZA JHANG SOUTH	600	65	435			100	100				
	CAMP 05	27.08.2022	LAKHNAI	250	67	183			50	50				

Rajhan Pur, Hajipur, Hasalpur & Faazalpur:

		DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Families
RAJHAN PUR	CAMP 06	30.08.2022	Kotla Ahmad	171	61	110	GASTRO URTI PYODRMA OTHERS	60 % 15 % 24 % 01 %	50	50
	CAMP 07	30.08.2023	Chak Shaheedan	137	37	100	GASTRO URTI Skin Allergy OTHERS	40 % 35 % 22% 03%	50	50
	CAMP 08	31.08.2022	Basti Kalia- Haji Pur	103	25	78	GASTRO URTI Skin Allergy OTHERS	55 % 08 % 35 % 03%	50	50
	CAMP 09	31.08.2022	Nari & Dona	237	49	188	GASTRO URTI Skin Allergy OTHERS	37% 15% 42 % 06%	100	100

Taunsa, Rajhan Pur, Hajipur, Hasalpur & Faazalpur:

Province of Khyber Pakhtunkhwa:

Nowshera, Risalpur, Ziarat Kaka Khel:

RMU teams responded right away to this humanitarian missionary call, and within two days, dozens of doctors, nurses, and medical students from RMU had reached Nowshera, Risalpur, and Ziarat Kaka Khel.

		DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Families	CLOTHES	OTHER ITEMS CAKES ,	PROCESSED FOOD	WATER BOTTLE
NOWSHERA	CAMP 01	01.09.2022	FAZAL GANJ	380	150	230	GASTRO URTI Skin Allergy OTHERS	22 % 13% 42 % 23%	100	100				
	CAMP 02	02.09.2022	BARA BANDA	502	40	462	GASTRO URTI Skin Allergy MSK OTHERS	31% 13% 37 % 09% 10%	100	100				
	CAMP 03	17.09.2022	Ziarat Kaka Khel	325	68	257	GASTRO URTI Skin Allergy MSK OTHERS	28% 17% 39 % 08% 08%	50	50	80	200	200	300
DERA ISMAIL KHAN	CAMP 04	02.10.2022	VILLAGE KUHAWAR TEHSIL DRABAN	587	109	478	GASTRO URTI Skin Allergy MSK OTHERS	33% 19% 31 % 10% 07%	100	100				

Province of Sindh:

Umer Kot:

Within two days, scores of RMU physicians, nurses, and medical students had arrived in Umer Kot in response to this humanitarian missionary appeal.

		DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Families	CLOTHES	OTHER ITEMS CAKES ,
SINDH	CAMP 01	12.09.2022	CHACH BAND (UMER KOT)	446	98	348	GASTRO URTI Skin Allergy MSK OTHERS	55 % 08 % 35 % 02%	100	100	50	100
	CAMP 02	12.09.2022	CHACHRO RAAD (UMER KOT)	487	83	404	GASTRO URTI Skin Allergy MSK OTHERS	37% 15% 42 % 06%	100	100	50	100
	CAMP 03	13.09.2022	UMER KOT	150	32	118	GASTRO URTI Skin Allergy MSK OTHERS	40 % 35 % 22% 03%	50	50		
	CAMP 04	13.09.2022	THQ UMER KOT	924	287	637	GASTRO URTI Skin Allergy MSK OTHERS	37 % 30 % 28% 05%	100	100		
	CAMP 05	13.09.2022	CHACHRO ROAD	591	184	407	GASTRO URTI Skin Allergy MSK OTHERS	60 % 15 % 24 % 01 %	100	100		
	CAMP 06	13.09.2022	CATTLE COLONY	402	61	341	GASTRO URTI Skin Allergy MSK OTHERS	40 % 28 % 24% 08%	100	100		
	CAMP 07	13.09.2022	GHAMORI	501	66	435	GASTRO URTI Skin Allergy MSK OTHERS	% 15 % 24 % 01 %	100	100		
	CAMP 08	13.09.2022	KUNRI	250	67	183	GASTRO URTI Skin Allergy MSK OTHERS	37 % 30 % 28% 05%	100	100		
	CAMP 09	14.09.2022	CHEEL BAND	180	41	139	GASTRO URTI Skin Allergy MSK OTHERS	28% 17% 39 % 08% 08%	50	50		

Continued…

Umer Kot:

		DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Families	CLOTHES	OTHER ITEMS CAKES ,
	CAMP 10	14.09.2022	SOMORO	210	48	162	GASTRO URTI Skin Allergy MSK OTHERS	60 % 15 % 24 % 01 %	50	50		
SINDH	CAMP 11	14.09.2022	UC SATRIYON	500	65	435	GASTRO URTI Skin Allergy MSK OTHERS	55 % 08 % 35 % 02%	100	100		
	CAMP 12	14.09.2022	RAJA RASTEE	251	67	184	GASTRO URTI Skin Allergy MSK OTHERS	40 % 28 % 24% 08%	100	100		
	CAMP 13	15.09.2022	CHEEL BAND	500	78	422	GASTRO URTI Skin Allergy MSK OTHERS	37 % 30 % 28% 05%	100	100	50	100
	CAMP 14	15.09.2022	UC SATRIYON	250	54	196	GASTRO URTI Skin Allergy MSK OTHERS	28% 17% 39 % 08% 08%	100	100		
	CAMP 15	15.09.2022	CHACHRO ROAD	601	160	441	GASTRO URTI Skin Allergy MSK OTHERS	50% 18% 30 % 02%	100	100	50	100

Province of Balochistan:

Akhterzai, Sohbatpur:

	DATE	AREA	TOTAL PATIENTS	PAEDS	ADULTS	DISEASES	%	Ration Drive	Families	CLOTHES	OTHER ITEMS CAKES ,	PROCESSED FOOD	WATER BOTTLE
CAMP 01	12.09.2022	AKHTERZAI	450	108	342	GASTRO URTI Skin Allergy MSK OTHERS	55 % 08 % 35 % 03%	100	100	200	300	300	300
CAMP 02	02.11.2022	GOTH MIR GHULAM RASOOL LEHRI – DERA ALLAH YAR	280	72	208	GASTRO URTI Skin Allergy MSK OTHERS	35 % 30 % 15 % 20%	100	100	100	200	100	200
CAMP 03	03.11.2022	GOTH ALI GULL QALANDARANI UC JHUDAIR – DERA ALLAH YAR	308	85	223	GASTRO URTI Skin Allergy MSK OTHERS	29 % 48 % 15 % 08%	100	100	100	200	100	200
CAMP 04	04.11.2022	GOTH FAZAL MUHAMMAD KHOSA – FAREEDABAD - SOHBATPUR	403	105	298	GASTRO URTI Skin Allergy MSK OTHERS	38 % 35 % 18 % 09%	100	100	100	200	100	200
CAMP 05	05.11.2022	GOTH HAJI SALAH GAJANI – PANHORI SINHRI - SOHBATPUR	364	89	275	GASTRO URTI Skin Allergy MSK OTHERS	38 % 35 % 18 % 09%	100	100	100	200	100	200
CAMP 06	07.11.2022	NOSHKI JADEED – GANDHARA - OSTA MUHAMMAD	287	97	190	GASTRO URTI Skin Allergy MSK OTHERS	35 % 30 % 15 % 20%	100	100	100	200	100	200
CAMP 07	09.11.2022	GOTH FAZAL MUHAMMAD KHOSA – FAREEDABAD - SOHBATPUR	344	112	232	GASTRO URTI Skin Allergy MSK OTHERS	29 % 48 % 15 % 08%	100	100	100	200	100	200

Province of Balochistan:
Akhterzai, Sohbatpur:

Disease prevention kit – A necessity for flood affected

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2 Dean Medicine & Gastroenterology, Rawalpindi Medical University

Abstract

We are seeing more and more extreme weather occurrences, including floods, as a result of global climate change. According to reports, 50% of all weather-related catastrophes having significant consequences on nations are floods. As a result of global warming, Pakistan has seen both prolonged drought (beginning 30 years ago) and recent tremendous rainfall (resulting in a huge flood) in rapid succession. Due to the geographical diversity and varying temperatures of the flooded regions, it is anticipated that the health consequences of the Pakistan 2022 flood would vary. However, the devastating effects of floods in Pakistan may be mitigated via the implementation of both long- and short-term preventative measures.

Introduction

An increase in the frequency and intensity of weather disasters like floods is a direct result of human-caused global climate change, deforestation, rising sea levels, and population expansion. Half of all weather-related catastrophes have been attributed to flooding, which has impacted 2.3 billion people and caused 157,000 fatalities globally between 1995 and 2015. (1). According to some estimates, by 2050, as many as 2 billion people might be in danger (2). Close to $60 billion is lost each year due to floods, the majority of which is in underdeveloped nations (3).

When compared to other regions, Asia has a higher probability of experiencing a flood. About 400 million people in Asia are at risk of flooding every year, and the region accounts for about 93% of global flood-related fatalities (4). As far as natural disasters go, Pakistan is in the eighth riskiest class. More than 109,000 people have been killed and 150,000 injured in natural disasters during the last four decades in Pakistan (5).

Precipitation in Pakistan follows a different pattern due to global warming than it does elsewhere. Pakistan has been suffering from a protracted drought because to climate change for about 30 years. During this time, several ecosystems have shifted, with forests disappearing, land shrinking, rivers drying up, and lakes drying up. Due to the drought, many people have relocated to regions that were formerly riverbanks and riverbeds. The result of these changes is a devastating flood in Pakistan. In almost all of Pakistan's five provinces, torrential rains swept away the exposed ground because there were insufficient trees and plants to prevent the water from seeping through (6). The majority of cities, according to the survey, were hit by sudden flooding. In some manner, 10 million people were affected by the devastating flood. Over three hundred individuals were killed, over ten thousand were injured, and over one hundred thousand people were either permanently or temporarily displaced from their homes (7). The massive damage of roads, homes, infrastructure, agricultural land, and animal farms has resulted in estimated financial losses of over 50 billion USD (6).

Our goal in writing this article was to examine the health-related knock-on effects of floods and to provide guidance on how to mitigate the spread of illness in the wake of the massive flooding that is expected to hit Pakistan in 2022.

The health of those in its path is affected in several ways. There is a wide range of elements that contribute to the health effects of floods (8–10). The after-effects of floods may be broken down into three distinct groups:

Injuries, drowning, hypothermia (especially in children), animal bites, acute asthma, skin rashes and clusters, gastroenteritis, and respiratory infection epidemics are all first-stage concerns connected with floods and its immediate aftermath (11–13).

Symptoms of chronic conditions including infection, zoonosis, poisoning, mental illness, and hunger begin to manifest during the second, intermediate stage (9).

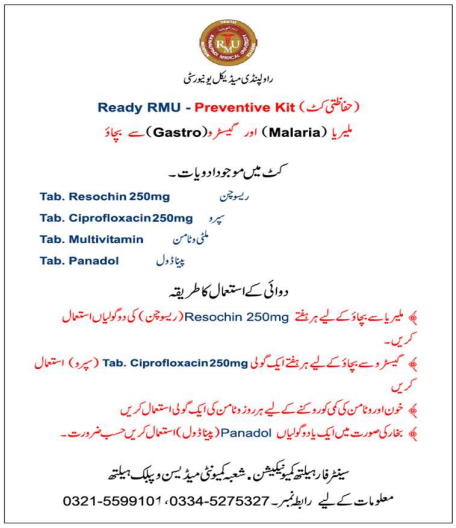
During the third and final phase, people are more likely to have long-term health issues such as disability, chronic illness, and hunger related to poverty. It's important to remember that flood victims face not just material losses, but also social/emotional/mental health issues. Risk of nostalgia, characterized by extreme psychological discomfort including anxiety, despair, irritability, and insomnia, is increased when victims are forced to relocate to new locations (9, 14–16). Extreme health issues, particularly for the elderly and the crippled, are a direct result of prolonged flooding due to the lack of sanitation and bad living conditions that often accompany it (17). Disruption of cancer treatment infrastructure, particularly among the elderly, has been linked to natural disasters, suggesting a causal relationship between natural disasters and cancer (18, 19).

While the wounded are still grieving the loss of loved ones and possessions, survivors of the flood will be at risk for a variety of health issues in the aftermath of the disaster. Because of the pollution of drinking water and the piling of garbage, the floods have dire secondary effects. The flood's aftermath left behind standing water, which formed a breeding ground for disease-causing bacteria and the insects that spread them (20, 21). Overcrowding, lack of sanitation, and tight quarters among displaced people all contribute to the spread of illness (23, 24). Water-borne, vector-borne, and rodent-borne illnesses all thrive in flooded habitats (25).

Diseases spread by contaminated water

Water-borne infections are most often caused by the contamination of drinking water systems by floodwaters after significant rainfall and flooding. Harmful microorganisms, such as parasites and viruses, may enter water systems during floods (26). Worldwide waterborne disease outbreaks were observed between 1980 and 2006, and they always followed floods (26–28).

Large amounts of information link floods with the spread of diseases including cholera, nonspecific diarrhea, cryptosporidiosis, rotavirus, typhoid, paratyphoid, and hepatitis A. (29–31). However, there is a higher risk for illnesses such dermatitis, conjunctivitis, wound infections, and ear, nose, and throat (ENT) infections due to direct contact with polluted waters, but thankfully these conditions are not prone to becoming pandemic epidemics (30).As a measure of prophylaxis against Gastroenteritis and Malaria, Rawalpindi Medical University (RMU) prepared its own medical kits by the name of "Ready RMU – Prevention Kit". It is for the first time globally, that such an initiative was taken. These kits were distributed in large numbers all across the country in flood affected areas.


راولپنڈی میڈیکل یونیورسٹی

Ready RMU - Preventive Kit (حفاظتی کٹ)

ملیریا (Malaria) اور گیسٹرو (Gastro) سے بچاؤ

کٹ میں موجود ادویات۔

Tab. Resochin 250mg ریسوچن

Tab. Ciprofloxacin250mg سپرو

Tab. Multivitamin ملٹی وٹامن

Tab. Panadol پینا ڈول

دوائی کے استعمال کا طریقہ

- ملیریا سے بچاؤ کے لیے ہر ہفتے Resochin 250mg (ریسوچن) کی دو گولیاں استعمال کریں۔
- گیسٹرو سے بچاؤ کے لیے ہر ہفتے ایک گولی Tab. Ciprofloxacin250mg (سپرو) استعمال کریں
- خون اور وٹامن کی کمی کو روکنے کے لیے ہر روز وٹامن کی ایک گولی استعمال کریں
- بخار کی صورت میں ایک یا دو گولیاں Panadol (پینا ڈول) استعمال کریں حسب ضرورت۔

سینٹر فار ریلیتھ کمیونیکیشن۔ شعبہ کمیونٹی میڈیسن و پبلک ہیلتھ

معلومات کے لیے رابطہ نمبر۔ 0321-5599101، 0334-5275327

Fig-1: **Ready RMU – Prevention Kit**

Contagious diseases spread via vectors

Evidence suggests that rainfall events affect arthropod vectors by altering the generation, development, behavior, and population dynamics of these organisms, as well as the infections and reservoirs they carry (32). More rain and standing water mean more places for mosquitoes like the Phlebotomus, Aedes, and Anopheles genera to lay their eggs, which in turn makes an outbreak of mosquito-borne diseases more likely (26, 33).

It is generally known that vector-borne illnesses including leishmaniasis, malaria, Rift Valley fever, yellow fever, dengue, dengue hemorrhagic fever, and West Nile fever have a tight relationship with times of severe rainfall and the resulting floods (30, 34–36).

The goal of vector control strategies is to make conditions unfavorable for the vector's growth, development, and offspring. Malaria and other mosquito-borne infections may be reduced by pesticide usage and indoor spraying campaigns (23).

Dangerous illnesses spread by rodents

Heavy rains and floods promote the spread of illnesses carried by rodents. Reports of leptospirosis and Hantavirus Pulmonary Syndrome epidemics after natural disasters are common (35). Heavy rainfall and floods encourage the development of wild grasses, which in turn supports an increase in rodent populations. In addition, floods dislodge rodents from their burrows, forcing them to seek refuge in areas densely populated by people. Direct contact with urine from infected rodents may spread disease via cuts, scrapes, and abrasions (37). In order to prevent the spread of rodent-borne illnesses, it is important to discourage rat reproduction by measures such as the proper collection and disposal of garbage and the cutting down of tall grasses in and near human settlements (38).

Security precautions

Natural catastrophes, such as floods, are a major cause of increases in migration, prices, health care expenses, energy demand, and the prevalence of poverty, according to a research of a number of Asian nations conducted between 2005 and 2017. (39). These results emphasize the need of developing highly competent preventative techniques to lessen the impact of catastrophic floods. Both long-term and quick fixes may be part of a comprehensive preventative strategy.

Preparations for the future

Problems with law, administration, and technology are all factors in the long-term prevention of floods. More has to be done by governments to strengthen flood monitoring on all scales, as well as to establish early warning systems and disaster-prevention initiatives. High hygiene standards, regulation and monitoring of tap water quality, and effective communicable disease control systems are all things that the health administrative community should be actively enforcing (30).

One of the most important strategies in disaster avoidance is the constant surveillance of hospitals and other relief institutions. As the most critical location for both medical care and safe evacuation, hospitals' structural and nonstructural flood preparation is a crucial concern for the general populace. Having hospital facilities undergo periodic retrofitting at six-month intervals and having a defined strategy for administrative operations during

disasters would be useful. In order to guarantee that hospital staff have the necessary knowledge and abilities to respond appropriately during a flood emergency, hospital administrators should take mandatory courses in disaster management and advocate for staff training programmes. At addition, a functioning Emergency Operations Center (EOC) that is checked on a regular basis must be present in every hospital. Numerous studies have been conducted on the disaster preparedness of hospitals in Iranian cities (40-43), however a study on the safety of 224 hospitals found an unsatisfactory mean score of 3 safety components, including structural, non-structural, and functional capability, of 32.4 out of 100. (5). More attention has to be paid to rural parts of the nation that have limited access to preventative services, in addition to the need to improve the quality of hospitals in coping with calamities like floods.

Public health professionals' recommendations for adaptive practises to reduce flood risk must reach those most in need of them. Flood alarm, post-alert (whether or not evacuation is necessary), and post-flood public education via media and local agents is necessary to foster the development of preventative habits (44).

Rapid, but temporary, action

Following the ebb and flow of advice from disaster officials and the general public after a flood will greatly lessen the likelihood of infectious illnesses spreading.

Chlorination is used to purify water for human consumption

Water chlorination is the most often used measure used to prevent the spread of disease via contaminated water. Almost all waterborne pathogens can be killed by exposure to free chlorine. The most appropriate forms of free chlorine for household are liquid sodium hypochlorite, solid calcium hypochlorite, and bleaching powder. The amount of chlorine has to be detected for each situation based on the concentration of organic material of water. It is important that the residual concentration of chlorine should reach to 0.2–0.5 mg/l after 30 minutes, which can be detected by a test kit (27).

As a preventive measure against Gastroenteritis and Malaria, RMU has created its own hygiene kits labeled "Ready RMU - Hygiene Kit." These kits were delivered in huge quantities around the nation in regions hit by flooding.

Fig-2: **Ready RMU - Hygiene Kit**

Health education

Providing post-flood educational packages promoting good personal hygienic practice are of high importance. Media-based programs or informative material about boiling or chlorination water, safe food preparation techniques, and early diagnosis and treatment of flood-associated diseases can reduce the burden of health problem (27).

Vaccination

Outbreaks of anthrax may occur after the floods due to percolating the spores buried in soil toward the surface of pasturages (45–47). To control outbreaks of anthrax, vaccination of animals should be considered by officials of the veterinary organizations.

The use of hepatitis A vaccines after flood are recommended for high-risk groups but mass immunization is not recommended (27).

Conclusion

Climate change leads to an increase in number and severity flooding, which is the most common and deadly catastrophe globally. Floods play a significant role in the epidemics of infections because of developing multiplication condition for pathogens and vectors. It is predicted that health subsequences of Pakistan 2022 flood vary due to the geographical extent and different climates of flooded areas. In addition to outbreaks of communicable diseases and the possibility of strengthening the endemic diseases new health problems will occur due to climate changes (7). During days after flooding, a quick disease risk assessment should be carried out by health officials in order to identify the proper interventions and medical needs.

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Monkey Pox

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Abstract:

Monkeypox is an emerging zoonotic disease that presents a significant threat to human health, particularly in African countries where outbreaks are most common. The virus is primarily transmitted through contact with infected animals, but human-to-human transmission can also occur. The disease is characterized by the development of skin lesions and flu-like symptoms, with a mortality rate of 1-10%. There is currently no specific treatment for monkeypox, but the smallpox vaccine has been shown to provide some protection.

This research article provides a comprehensive review of monkeypox, including its epidemiology, clinical features, pathogenesis, and potential for dissemination. Additionally, it explores the current strategies for preventing and controlling monkeypox outbreaks.

Introduction:

Monkeypox is a zoonotic disease caused by the monkeypox virus (MPXV), which belongs to the Orthopoxvirus genus of the Poxviridae family. The disease was first identified in 1958 when outbreaks were reported in monkeys kept for research, and subsequently in humans in the Democratic Republic of the Congo (DRC) in 1970.

The virus is primarily found in wild animals such as rodents and monkeys, particularly in forested areas of central and West Africa, but has also been reported in other countries. In recent years, reports of human cases of monkeypox have increased in Africa, and sporadic cases have been reported outside the continent.

Clinical features:

Human infection with MPXV presents with a range of clinical features, including fever, headache, muscle aches, and fatigue, followed by the development of skin lesions that progress from macules to papules, vesicles, pustules, and crusts. These lesions are often distributed across the face, trunk, and limbs and are similar to those of smallpox. The disease is generally self-limiting, with a mortality rate of 1-10%, although some fatalities have been reported.

Pathogenesis:

Although the pathogenesis of monkeypox is not fully understood, it is believed that the virus enters the host through the respiratory tract or broken skin. Following infection, the virus replicates in various organs, including the lymphatic system and skin, leading to the development of skin lesions.

Prevention and control:

Current strategies for preventing and controlling monkeypox outbreaks include active surveillance, which involves rapid detection and prompt response to suspected cases, isolation of infected individuals, contact tracing, and implementation of infection prevention and control measures, including hand hygiene and use of personal protective equipment. Additionally, vaccination with the smallpox vaccine has been shown to provide some protection against monkeypox.

Conclusion:

Monkeypox remains a significant threat to human health, particularly in African countries where outbreaks are most common. Travelers to these areas should take appropriate precautions to avoid contact with infected animals and practice good hygiene. Increased surveillance, prompt detection, and effective

outbreak response are crucial for controlling the spread of disease in endemic areas.

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Barriers to Entrepreneurship in Healthcare Organizations in Pakistan

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Abstract

There are many barriers to starting a medical institution in Pakistan. Some of the career barriers are entrepreneurship, gender barriers, and lack of knowledge about funding issues. Additionally, purchasing power parity (PPP) related barriers can hinder starting a healthcare startup. Additionally, academic issues can cause a lack of entrepreneurship in healthcare organizations. By understanding these barriers and working to overcome them, healthcare organizations can drive more innovation and growth within their organizations. Job barriers, gender barriers, funding issues, and barriers related to purchasing power parity are some of them. However, while expanding these barriers further, the structural issues are at the core of Pakistan's prevention of healthcare entrepreneurship. According to numerous studies, the state's small business policy, administrative procedures (new company registration, licensing, etc.), tax laws, access to finance (bank loans, grants, etc.), ensuring private property protection, and the standard of living in the country. , political instability/corruption, international trade barriers, a shortage of skilled manpower (HR), and an inefficient judicial system are structural barriers to healthcare startups in Pakistan. This critical reflection discusses these factors in detail and provides empirical evidence to support his claims.

Keywords: Barriers; entrepreneurship; healthcare organizations; Pakistan.

Introduction

There are many barriers to entrepreneurship in healthcare organizations in Pakistan. Some of the professional barriers include a lack of knowledge about entrepreneurship, genderbased barriers, and financing issues. Additionally, purchasing power parity (PPP) related barriers can also be a hindrance to starting a healthcare startup. Additionally, academic issues can cause a lack of entrepreneurship in healthcare organizations. By understanding these barriers and working to overcome them, healthcare organizations can encourage more innovation and growth within their ranks. Professional barriers, gender-wise barriers, financing issues, and purchasing power parity-related barriers are some of them. However, while expanding these barriers further, the structural issues are at the core of the prevention of healthcare entrepreneurship in Pakistan. Numerous studies show that state policy toward small and medium-sized companies, administrative procedures (registering a new company, licenses, etc.), tax legislation, access to finances (bank credits, grants, etc.), security of private property protection, life standard in the country, political instability/corruption, international trade barriers, absence of qualified human resources (HR), and inefficient judicial system is the structural barriers preventing healthcare startups in Pakistan This critical reflection will discuss these factors in detail and provide empirical evidence to support its claims.

Methodology

The methodology of this reflection was based on a keyword search that explored articles from Google Scholar, JSTOR, Academia, and ScienceDirect. Besides, the data are qualitative and it incurred literature related to the study subject. The following keywords were mentioned in searches to discover literature available on the healthcare entrepreneurship barriers: • Healthcare entrepreneurship in Pakistan • Issues of entrepreneurship • Healthcare startups • Challenges faced by SMEs in Pakistan • Entrepreneurship in

healthcare organizations of Pakistan. 3. DISCUSSION Provision and access to quality health services have been critical issues in developing economies. On the one hand, quality health is a basic right and requirement of every human being living, while on the other hand, it is considered an indicator to gauge the status of the human capital of an economy. According to World Bank, approximately 2.3 billion people in the world do not have access to basic health services [1]. This includes a large population in developing countries like Pakistan. Nonetheless, Pakistan has been facing numerous barriers that impede the growth of entrepreneurship in healthcare organizations. The country suffers from a weak institutional framework that has not been able to address the needs and requirements of entrepreneurs. In addition, there is a lack of awareness about entrepreneurship among healthcare professionals [2,3]. This is because medical institutions are not wellequipped to provide quality healthcare services. Furthermore, there are high costs associated with starting up businesses in the healthcare and pharmaceutical sectors [4]. All in all, the barriers to healthcare entrepreneurship in Pakistan include lack of professionalism, sexist culture, absence of financing mechanisms, academic loopholes, inappropriate policies, complex administrative procedures, inefficient tax regime, political instability and corruption, inefficient human resource, tech-obsolete state of affairs, outdated equipment and cancer-oriented barriers. 3.1 Scarcity of Professionalism in Healthcare One of the most common obstacles to starting a healthcare business is the lack of experience and knowledge among professionals. Many healthcare employees have backgrounds in medical sciences or nursing, but little understanding of business concepts and no experience in entrepreneurship [5]. This can be a major barrier to starting a healthcare business because it is difficult to find the resources necessary to start and run the business. Healthcare businesses often require significant financial investment from both the entrepreneur and their investors, which can be difficult for someone who lacks experience in finance or accounting. Another obstacle that practitioners face when starting a healthcare business is professional barriers [6]. Many healthcare professionals are not familiar with the unique challenges faced by female entrepreneurs, which can make it difficult for them to provide support and guidance. Additionally, many healthcare professionals may be resistant to change, which can pose a major challenge for female entrepreneurs [5,7]. 3.2 Women-oriented Barriers Besides, women also face significant challenges when trying to start and grow a healthcare business. They are often less likely to have the same level of experience and knowledge as their male counterparts, and they may not be able to access the same financial resources. This can make it difficult for women to start and grow a healthcare business, especially if they do not have family members or friends who can help support them [8]. 3.3 Healthcare Startup Financing Concerns Considerably, financing issues are also frequent in the country. Studies have indicated that entrepreneurs are not able to survive the initial costs on their own. This is especially problematic for health startups, as they need a lot of capital to get off the ground and create new jobs. In addition, healthcare organizations in Pakistan are often bureaucratic and resistant to change, which makes it difficult for new entrepreneurs to get started. In terms of gender, women particularly lack access to financing [3,9]. Healthcare businesses often require a high level of investment to be profitable, but this is often out of reach for small businesses without access to angel investors or venture capitalists. This can make it difficult for women to start and grow a healthcare business, especially if they do not have the financial resources necessary. Emphatically, one of the biggest obstacles that women face when starting a healthcare business is purchasing power parity [10]. Healthcare businesses often require high levels of equipment and materials, which can be difficult for female entrepreneurs to afford. This can make it difficult for women to start and grow a healthcare business, especially if they do not have the financial resources necessary. 3.4 Academic Loopholes

One of the main reasons that healthcare entrepreneurs are less likely to start and grow a healthcare business is due to academic issues. Many healthcare organizations are infested with bureaucracy, which can impede female entrepreneurs' ability to access important resources and information. This can make it difficult for them to start and grow a healthcare business, especially if they do not have the necessary academic qualifications. Another barrier is the lack of access to information. Healthcare organizations often do not have the resources or knowledge necessary to support entrepreneurship [11]. They also need to be open to change and willing to embrace innovative ideas. Finally, there are a number of professional barriers that healthcare entrepreneurs face. They often lack the necessary skills or experience, and they face gender-based discrimination [11]. 3.5 Policy-oriented Deficiencies At another level, several studies have also indicated that state policy towards small and medium-sized companies, administrative procedures (registering a new company, licenses, etc.), tax legislation, access to finances (bank credits, grants, etc.), security of private property protection, life standard in the country, political instability/corruption, international trade barriers, absence of qualified human resources (HR), and inefficient judicial system are the structural barriers preventing healthcare startups in Pakistan [12]. 3.6 Cumbersome Administrative Procedures Administrative procedures, such as registering a new company, can be extremely time-consuming and difficult. Licenses are also necessary for most businesses but can be difficult to obtain. Licensing can also be burdensome, with many requirements that are not always clearly defined [12]. Furthermore, regulations concerning the medical industry can be complex and difficult to understand. This can make it difficult for healthcare startups to comply with these regulations, or to find qualified professionals who are familiar with these requirements [13]. 3.7 Inept Tax Legislations Tax legislation is also a significant barrier to entrepreneurship in the healthcare sector. Healthcare providers must pay taxes on their profits, as well as on their income from investments. However, taxation rates can vary greatly from one business sector to another, making it difficult for healthcare startups to compete in an environment where margins are thin. Additionally, taxes can be very complex and difficult to understand [14]. This can make it difficult for healthcare startups to comply with taxation requirements, or to find qualified professionals who can assist them with this process. Besides, the security of private property is another major barrier to entrepreneurship in the healthcare sector. Healthcare providers must protect their intellectual property (IP) rights and must deal with the potential consequences of theft or vandalism [15]. This can be a significant problem for those businesses that operate in highly regulated industries, where corruption is common [13]. 3.8 Political Instability and Corruption Nonetheless, political instability and corruption are also significant barriers to healthcare startups. Many healthcare providers operate in politically sensitive areas, where the risk of political violence or extortion is high. This makes it difficult for them to attract capital, or to protect themselves from intimidation [14]. Moreover, many healthcare providers are exposed to corruption at both the governmental and private levels. This can make it difficult for them to get their businesses off the ground, or to expand them into new markets. At the same time, International trade barriers are a significant challenge for healthcare startups in Pakistan [15]. Many of these businesses must deal with difficult import and export regulations, as well as high tariffs. This can make it difficult for them to get their products into the market, and can also lead to high costs associated with importing materials and equipment [16]. 3.9 Human Resource Issues In addition to these structural barriers, many healthcare providers in Pakistan suffer from a lack of qualified human resources. This is due in part to the fact that many graduates from Pakistan's universities are not interested in pursuing careers in the healthcare sector. Furthermore, many healthcare professionals who do enter the industry are not able to find

jobs that are appropriate for their skills and training [17]. This leaves healthcare providers with few options for obtaining a steady income. Finally, the Pakistani judicial system is often inefficient and slow. This makes it difficult for businesses to resolve disputes or gain access to important legal resources. This can lead to delays in getting new projects off the ground, or to problems with accessing existing resources. Furthermore, the healthcare system in Pakistan is often burdened by significant barriers to entrepreneurship [15]. This is due to the fact that healthcare providers are often poorly paid, and there are few opportunities for patients to find new doctors or hospitals. In addition, the government has placed a number of restrictions on the sector over the years, making it difficult for new providers to enter the market [14]. 3.10 Lack of Tech-savvy Culture in the Healthcare Sector Technology is an important barrier to entrepreneurship in healthcare organizations in Pakistan. The lack of access to technology, as well as the reluctance of healthcare staff to adopt new technology, has hindered the development of innovative products and services. Supplier relations are also a major obstacle to business growth [17]. Healthcare organizations often find it difficult to secure reliable supplies of medical equipment and medications, and they have difficulty negotiating discounts from suppliers. In addition, healthcare organizations face significant regulatory hurdles when attempting to launch new products or services [18]. The country's health regulatory system is complex and burdensome, making it difficult for healthcare organizations to comply with regulations and open up new markets. Finally, access to finance is also a major barrier to enterprise growth in Pakistan's healthcare sector. Healthcare organizations struggle to obtain loans from traditional financial institutions due to the high levels of risk associated with the industry. This lack of access to finance often forces healthcare startups to seek alternative financing options, such as venture capital or crowdfunding [7]. According to a [19] study, the health information system in Islamabad and Rawalpindi districts is not well established. Equipment availability was moderate at district, sub-district, tertiary, and secondary care levels. However, the study also found that there was no evidence of a collaborative environment between different healthcare providers. The study also found that there was low awareness about the benefits of using information technology in healthcare and few health workers were trained in using IT. These findings suggest that barriers to entrepreneurship in healthcare organizations are significant in Pakistan. Moreover, studies have shown that the health information system in Islamabad and Rawalpindi districts is not well established [20]. The equipment (desk PCs, laptops, printers, etc.) were moderately available at district, sub-district, tertiary, and secondary care levels. However, the study also found that there was no evidence of a collaborative environment between different healthcare providers. The study also found that there was low awareness about the benefits of using information technology in healthcare and few health workers were trained in using IT. These findings suggest that barriers to entrepreneurship are significant in Pakistan [21]. 3.11 Outdated Equipment Several barriers stand in the way of entrepreneurship in healthcare organizations in Pakistan. One of the most common reasons for staff dissatisfaction is outdated equipment, which is often seen in primary healthcare setups. This outdated equipment often creates difficulties for patients due to its lack of functionality and safety concerns. Additionally, a lack of training and knowledge about entrepreneurship can also be a barrier to starting businesses in healthcare settings. There is a significant need for education on entrepreneurship within healthcare organizations so that staff can learn about the various opportunities available and develop their skills accordingly. Similarly, a study conducted in Saudi Arabia found that computer availability - particularly laptops - was limited at different healthcare levels. The study, which was carried out by business consultancy Ernst & Young and the Saudi Chambers of Commerce and Industry, found that despite the availability of laptops in

hospitals, only a small percentage of healthcare workers were using them [21]. The study also found that there are a number of barriers to entrepreneurship in healthcare organizations. These include a lack of awareness about the benefits of starting or running a business in healthcare, inadequate infrastructure and skills, and insufficient financial resources [22]. 3.12 Cancer-related Barriers Similarly, cancer hospitals are also meager in Pakistan. Several social entrepreneurship startups like Shaukat Khanum Memorial Hospital exist in the country only. Cancer patients have to travel long distances to get treatment, and even then, many hospitals are not equipped to deal with cancer patients. There is also a lack of awareness about cancer among the general public, which makes it difficult for potential entrepreneurs to start cancer-focused businesses in Pakistan [23]. Professional barriers such as a lack of experience in cancer care, poor working conditions, and a shortage of skilled medical professionals are some of the major barriers to entrepreneurship in healthcare organizations. In terms of gender-wise barriers, women often face discrimination when it comes to obtaining cancer-related jobs [24]. Moreover, financing issues and purchasing power parityrelated barriers are also significant hurdles for healthcare startups in Pakistan. Academically, several issues prevent entrepreneurs from starting cancer-focused businesses in Pakistan. For example, many medical students are not taught about entrepreneurship in their courses, which hampers their ability to start their own businesses [25]. All in all, the issues are multiple and their consequences are far-reaching in the country.

Conclusion And Recommendations

Despite these barriers, there are a number of healthcare startups that are succeeding in Pakistan. One example is Medtronic Pakistan, which manufactures medical devices. In addition, there are a number of female-led startups that are succeeding in the Pakistani market. One way that healthcare organizations can help support entrepreneurship is by providing incubation programs that provide mentorship and support. These programs should focus on giving entrepreneurs the skills they need to succeed, and they should be open to change and willing to embrace innovative ideas. Healthcare organizations also need to be sensitive to the different barriers that different groups of entrepreneurs face [26] [18]. For example, female-led startups often face genderbased discrimination, while startup entrepreneurs from rural areas often have less access to financing In conclusion, it can be contended that the barriers to entrepreneurship in healthcare organizations in Pakistan are numerous and complex, they do not seem insurmountable. With the right tools and resources, healthcare organizations can overcome these challenges and begin to develop new products and services. However, support from government officials and other influential figures is essential for enterprise growth [27] [22]. Without the necessary backing, healthcare startups will struggle to survive and prosper. There are a number of ways that healthcare organizations can help support entrepreneurship in their midst. They can provide guidance and funding for early-stage ventures, work with established businesses to share best practices, or create incubation programs that provide mentorship and support [28]. If healthcare organizations want to support entrepreneurship in their midst they need to be open to change and willing to embrace innovative ideas. They also need to be sensitive to the different barriers that different groups of entrepreneurs face. Though progress has been made, much work still needs to be done in order to improve the situation for healthcare providers in Pakistan [29] [30]. In particular, the government should continue to implement policies that help businesses thrive, and the judicial system should be made more efficient and accessible.

Competing Interests

Authors have declared that no competing interests exist.

Forests Under Siege: Indigenous Causes of Deforestation in DirValley, Pakistan

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Deforestation is a worldwide concern, but the Pakistani government recognises the importance of trees and strives to conserve them. In order to achieve this objective, the country has undertaken a reforestation initiative. The objective is to increase forest resources so as to safeguard the country's environment against looming dangers. In addition, these forests are anticipated to stimulate the nation's economy in the future. Despite regeneration efforts, the country's woods continue to disappear at an alarming pace. This study is being conducted in Asban'r Valley, Dir District, Khyber Pakhtunkhwa, Pakistan in order to identify the local reasons that have contributed to the deforestation of the area. To collect data, qualitative researchers used methods such as establishing and sustaining personal connections with individuals, observing them in their natural habitats, conducting in-depth interviews, and interviewing key opinion leaders. Twenty-one respondents were randomly selected. When analysing empirical data, descriptive analysis is the preferred technique. Other causes highlighted by various studies and indigenous causes in the study area led to depletion as a result of the political support of timber mafia and locals who cut the trees with the collusion of timber mafia and forest officials; and have the competition for the maximisation of property among the locals who lack ownership in the forest and contumacy of cutting the trees and social disorganisation. Some of the expressions used to characterise the destruction of forests include afforestation, deforestation, degradation, the Timber Mafia, conspiracy, and disdain. 1. Establish the Setting

Forests are essential to a nation's economy and ecological. However, deforestation has both economic and ecological problems. The first known instances of deforestation date back to the eighteenth century. It is the removal of trees from a vast territory (Meyer, Kooten &Wang, 2003). Destruction of trees is largely acknowledged as one of the most intractable environmental issues. Even though it is known that deforestation causes environmental degradation, it persists unabated in the majority of the world's areas (Hasan, 2007). According to Allen and Barnes (1985), deforestation in developing nations is far greater than in industrialised ones. The terrain and mountains of these rising countries are getting increasingly desertified. In order to avoid the deforestation of tropical forests and the subsequent loss of forest resources and environmental stability, researchers, policymakers, and state institutions are very concerned about the causes of deforestation and the strategies for its management (Meyeret al., 2003). Numerous studies have demonstrated the detrimental consequences of deforestation (Hasan, 2007; Allen &Barnes, 1985; Ali & Benjamensin, 2004). Due to the urgency of the issue, a worldwide campaign to raise awareness of the need to safeguard forests has been initiated. In the 1980s of the 20th century, a campaign to protect the world's dwindling forest resources was initiated (Allen & Barnes, 1985). Deforestation is an issue in several developing countries, including Pakistan. Despite comprising 4.8% of Pakistan's total land area, the country's forest resources are severely depleted. Nevertheless, unrestrained deforestation is contributing to the extinction of current forest resources. Khyber Pakhtunkhwa is the most wooded province in Pakistan and Azad Jammu and Kashmir, accounting for over 40 percent of the total land area. Only 6.5 percent of the country's entire geographical area is covered by trees, with forest cover ranging from 14.4 percent in Punjab to 9.4 percent in Sindh to 14 percent in the Northern Areas to 15.7 percent in Kashmir (Hasan, 2007). These

include commercial logging, weak forest laws, corruption, unclear and coerced property rights, migration, population pressure, dysfunctional labour markets, and fuel wood consumption (Meyer et al., 2003). In addition to human activity and economic growth, infrastructure and roads also contribute to deforestation (Allen & Barnes, 1985). Numerous specialists dispute that the expansion of roads and towns and the use of fossil fuels are the key causes of forest loss. In the Theory of Himalayan Environmental Degradation, population increase is identified as the major cause of forest loss. However, empirical evidence acquired in the Basho Valley of Baltistan led to harsh criticism and the final rejection of this theory. It was determined that deforestation is not caused by expanding populations, the need for fossil fuels, or animal grazing (Ali & Benjaminsen, 2004). On the one hand, pessimism is generated by studies that demonstrate people's callous disdain for the disappearing forest. Nonetheless, there are studies that dispel the general pessimism by providing preventive measures and that bring confidence for the future supply of rich forests (Hasan, 2007; Allen & Barnes, 1985). Numerous variables that lead to deforestation have been identified by Pakistani researchers; nevertheless, the indigenous elements that are the subject of this study need particular attention. If these causes are not addressed, Pakistan's forests may be reduced to rock, resulting in global warming, soil erosion, animal population decline, regional conflict and economic instability, land slip, and environmental degradation. The Taxonomic Analysis of Trees in Pakistan In Pakistan, there are a variety of forest types, however they may be divided into two basic categories: public forests and private forests. The provincial government has control for the Public Forests. The province's Department of Forestry has the right to intervene in Public Forests. The public forests consist of all state and federally protected woods. The Reserved Forests of Pakistan are dispersed among the provinces of Punjab, Sindh, and Khyber Pakhtunkhwa (formerly NWFP). Reserved Forests are privately held, with no legal claim by the local community. However, the government did grant them a few advantages, such as the ability to graze animals, get water from neighbouring forests, construct roads, and collect firewood. Community members are authorised by law to take firewood from these forests for their own personal heating and cooking needs. Here, almost 53 percent of America's annual energy needs are fulfilled by wood (Ali & Benjaminsen, 2004). There are both unprotected and protected regions inside public woods. All four provinces of Pakistan still include these forests. The government has allowed the local populace permission to utilise Protected Forests for non-commercial purposes. The rights include the authority to harvest trees for non-commercial uses, including construction materials, fuel, animal feed, construction materials, passage, water, and grazing. The government started to regulate privately held protected forests in 1970. State Forests are the third kind of Public Forests and may be found in locations such as Baluchistan and Kashmir. Residents are limited in their freedom to graze, pass, water animals, and collect firewood in state woods, since they are under government control. Public Forests also include Reopened Forests and Unclassified Forests. Since the Unclassified Forests have not yet been officially classified, these regions are presently considered Protected Forests. However, during the land reforms of the Zulfiqar Ali Bhutto administration, the government acquired control of the Restored Forests (Hasan, 2007). Private forests are the second most widespread kind of forest. Private woods may also be categorised as "Communal" or "Guzara" forests. There are huge community woodlands in northern Pakistan that are used by local groups. Even though the government now enforces restrictions in the Communal Forests, they were formerly owned by the community. This altered when the northern provinces of Pakistan were combined. Although the government may ban commercial tree harvesting, the Guzara Forests are collectively owned. Locals have the legal right to benefit from the Guzara Forests' exploitation. Guzara

biome forests are also known as Regulated Forests (Hasan, 2007; Ali & Benjamensin, 2004). In theory, the investigated region's woods are private forests, yet they are not being used as private forests should be. What We Have Learned About Deforestation Over the Years In 1878, when the Indian Forest Act created a framework for governing Pakistan's woods, the country's forests legally fell under its control. The legitimacy of the government's attempts to safeguard forests from depletion was enhanced by this act. Simply expressed, the implementation of this law sparked widespread hostility to the government. The residents claimed ownership of the forest, so when the government prohibited them from cutting down trees for their personal gain, widespread unrest and despair ensued (Azhar, 1993). Authorities' prohibitions are the only thing that bothers people; several studies have shown no indications of commercial logging in the Subcontinent (Tucker, 1984). Under British dominance in the Subcontinent, however, the government was responsible for widespread deforestation. Massive amounts of trees were chopped down in order to build railroads and ships (Hasan, 2007). During the two world wars, Himalayan timbers were extensively used. During World Wars I and II, Europe acquired 400 000 and 440 000 sleepers from the Himalayan forests, respectively (Hasan, 2007). Almost every mountain range in Pakistan is wooded. It has been observed that hill people face discrimination because of their distant position. The locals are thus able to fulfil all of their needs from the forest. When the state extends its power to cover the woods of mountainous regions, the local populace's opposition is rekindled. Provinces are responsible for forests. To guarantee compliance with forest legislation and the protection of forests, forest departments were established. The inhabitants of the forest have no other source for their fundamental needs. Consequently, they continue to take down trees for profit. Due to this contempt for forest restrictions, the government moved against the people of the woods, and a delicate battle to stop deforestation was started (Tucker, 1984). Once upon a time, the government depended on taxes on wood sales from the enormous forest regions of the nation. Prior to 1973, the Forest Service sold clients trees that were already in existence. Contractors that buy standing trees for the purpose of unlawfully down more trees than permitted have voiced opposition to the approach. Officials and contractors collaborated to unlawfully down more trees. In addition, a study conducted by the Kalam Integrated Development Project indicated that forest department workers and contractors colluded to create deforestation. Negative publicity surrounding this practise eventually led to its demise. When this technique was maligned, the Forest Development Corporation (FDC) was founded. FDC's logging and shipping activities were previously authorised. The FDC solicits proposals for wood gathering and delivery. Although contractors were also employed in the past, in contrast to present practise, contractors have no legal rights to the trees they work on. Since he does not own the property, there is no need to take down further trees. After 1977, as wood prices climbed, the FDC started using tendering cut trees. There is a twist to this technique. FDC harvests and maintains trees in the forest by the use of physical labour. Even However, there are authors who disagree with the latter procedure because they believe it lacks transparency. According to them, contractors were engaged in the increased deforestation due to the FDC's ties to them. According to these individuals, the Forestry Division and Forestry Development Corporation (FDC) represent a comparable threat to forests (Hasan, 2007). Four Forestry Initiatives and Their Unsatisfactory Outcomes In addition to legal and illicit deforestation, several afforestation operations have been started to assist compensate for the paucity of forest resources in the country, although few of these projects have been effective. According to residents of the forest, the provincial Forest Department is not invited to plant trees in the region. In addition, the excessive grazing hampers the land's natural regeneration. Locals in Kashmir and the northern parts of Khyber Pakhtunkhwa (KP) resisted the introduction of

social forestry programmes. Residents have access to a limited amount of agricultural land due to the steep terrain. They lack confidence in the government and fear that when these trees grow, they may be evicted off their land. Since the government now owns the forest, it is no longer permissible for residents to remove trees for profit. And they asserted that afforestation reduces grazing (Hasan, 2007). To address deforestation and environmental degradation, the provincial and federal governments of KP have undertaken projects like as the Billion Tree Tsunami Project, Green Pakistan, and Tree for Pakistan. The government estimates that the aforementioned actions raised KP's percentage of forest resources by more than 4% this year (Daily Mashriq, 2019). Processes (5) This study was founded on qualitative research methods, such as getting to know the participants, seeing them in their natural habitats, conducting in-depth interviews, and speaking with key stakeholders. Since deforestation is the major source of income for residents, study on the problem has concentrated on the most often reported causes for worry. Respondents are apprehensive to offer such information to strangers; thus, it was necessary to earn their confidence before they would be willing to do so. According to Roy Baumeister, when a researcher has created trust with a subject, that individual is more willing to answer questions candidly and give more information or aid (2003). The researcher made an attempt to establish a good rapport with the respondents, bearing in mind the advantages of doing so. To establish rapport with the interviewees, gain their trust, and get access to their observations, the researcher purchased twenty sleepers of the collected timber from the local community. Also advantageous is the researcher's employment of a transporter to relocate the sleepers. Sleepers were maintained in the storage section of the wood-cutting machine for one month. A forest official contacted the Timber mafia and assisted the researcher in transporting the sleepers from the study area to the Mardan District of Khyber Pakhtunkhwa. The purpose of all this lumber acquisition, storage, and movement was to get as much knowledge as possible about wood smuggling and its hidden ways. Additionally, twenty in-depth interviews were conducted with respondents. Included in the sample are ten locals who earned a livelihood via routine tree trimming. Due to their considerable role in deforestation, three interviews with members of the wood mafia were undertaken. The trees were removed from the slopes. Specialized trucks were necessary to bring the timber to the plains. A transporter who transported logs from an incline to a plain was questioned. The wood cutting machine in the plains acted as a staging area from which trucks and other vehicles loaded timber for illegal shipment to other parts of Pakistan. The proprietor of the wood-cutting equipment was questioned. Five forest officials were questioned to determine the reasons of the escalating rates of deforestation and illicit wood trafficking, which were the subject of an inquiry. The major responsibility of the Forest Service is to prevent illicit logging and tree felling. Three of the twenty responders, including a local, a member of the wood mafia, and a forest authority, served as vital informants. We were able to learn about the place and put together facts that would have been difficult to discover without interviewing locals with intimate knowledge. An interview with a political leader emphasises the political support of local tree cutters. This study's respondents were selected using a systematic sampling technique. Using descriptive analysis, the empirical data were examined. Number six of the Conclusions We know the following to be the primary reasons of deforestation in Dir District, Pakistan, based on actual evidence: Locals' unwavering political support for daily tree cutters and timber mafia; locals' collusion with timber mafia and forest officials; locals' competition for property maximisation; locals' lack of ownership in forests; social disorganisation; locals' contumacy for cutting trees; and locals' lack of alternate means of subsistence. Politicians in the region supported the seven out of ten locals who chopped down trees on a regular basis. Two of them are really friendly with the forest service personnel. On the instructions of the forest department, the

local police repeatedly held five people. Each of the three individuals got a 30,000 Indian Rupee fine. Due to political pressure, the police agency released the inmates immediately. They freely recognise the aid of the political authorities. The timber mafia has enormous power due to its close relationships to government and forest department officials. It was uncovered that the cousin of the provincial governor was a member of the timber mafia. A district forest officer was recently relocated on approach because he was in the path of the timber mafia. They bribe the forest authorities, known in their language as a Mahwari, every month. Several forest workers participated in the plot between the transporter and the owner of the wood-cutting equipment. Six of the people who cut trees on a regular basis were financially stable, although they did it to raise the value of their homes. Eight of the ten local respondents said that they cut down trees not for survival, but because they had no other option. They cannot assert ownership over the forest. The original people have a great commitment to their property and are prepared to use whatever means necessary to safeguard what is left of it, despite the fact that the government has taken away their rights to ownership of these woodlands. They also thought that if one person cuts down a tree, others would feel obligated to reciprocate by chopping down two more as an act of disdain in order to avoid falling behind economically. The indigenous had a minimal social structure. Nobody is asking anybody else to halt the frightening amount of deforestation that is occurring. In their thinking, if one individual in the community intended to cut down a tree, the rest of the people would rise up in protest, since the trees were considered common property and the residents were socially constructed in such a way that a wood cutter could not go against them. He feels unable to cut down trees due to peer pressure. 7. Forest Loss Due to Local Factors As a consequence of the considerable environmental harm that is predicted for this century, deforestation has become a major worry for governments throughout the world. In the examined area, the pace of deforestation has not reduced despite the abundant data demonstrating the detrimental environmental and economic repercussions of deforestation. Some of the indigenous (local) causes of deforestation in the study area that contribute to the waste of forest resources are as follows: Eight, regional political figures' support The political leaders in the region under investigation follow the same pattern as the residents, who cut down trees daily to better their financial status. Interviews with forest officials revealed that they are acquainted with the individuals responsible for felling trees in the most remote sections of the forest. They also get daily information on deforestation from their neighbours and collect daily statistics on the amount of trees that have been taken down. They were unable to halt the woodcutters or the inevitable destruction. These arborists are dedicated to the politicians and parties in the political establishment in their region. During election campaigns and political rallies, the woodcutters exert considerable effort to garner support for their chosen political leaders. When forest authorities with the cooperation of the police catch the wood cutters. Politicians such as the Nazims and the MPA utilise their influence with those in authority to obtain their release. Officials in the forest saw that locals were often apprehended and then freed without punishment. Rarely were some persons subject to monetary sanctions. According to the locals, they cut down more trees than required to pay the price. They have such political support and influence that their issues are settled at the police station or forest office rather than in court. The forest service staff then informed him that their colleagues had been tortured in the past and intimidated him so that he would not return. The forest officer wants to draw attention to the issue, but his action and the assistance of the police were sufficient to resolve it. The case was never made public due to this reason. They continued by stating that despite several First Information Reports (FIRs) being filed against the wood cutters, none of them were arrested. It is common for FIR suspects to seek refuge at the Hujra of the country's political leader. The suspects' arrest was prohibited by the political authorities.

Multiple individuals verified that they received the support of political leaders. Local woodcutters who are politically involved have aided in reviving deforestation. It was identified via an interview with a political leader who fiercely supported the wood cutters. He mentioned the support of the wood cutters and the government's failure to provide them employment. They are on the edge of society and excluded from government assistance. Deforestation is their only economic means of existence. If the government can employ at least one member of each household, people will cease chopping down trees of their own own. He proceeded by stating that he approves of them cutting wood for financial gain, since it is the only way to secure their continuing allegiance. In exchange, the villages provide votes. Their mutually reinforcing cycle threatens the forest resources in the region. Support for Elected Officials It is no secret that the most prominent politicians in the province support the timber mafia and their network of illicit woodworkers. The timber mafia has prominent government members who use their positions to their advantage. This advantage results in the destruction of vast quantities of forest. Through discussions with forest officials, a District Forest Officer who is exceptionally honest and committed was identified. He did not care if others were arrested attempting to transport timber. Numerous wood mafia members dreaded him. Meanwhile, the district's timber mafia united with an out-of-town rival group. Allegedly, one member of the gang was linked to a regional official. A second member of the group had romantic ties to regional party officials. The district forest officer was transferred to a remote section of the province as a result of his or her relationships and emotional ties to the ruling class. The timber mafia saw his transfer as evidence of their newly discovered freedom. They were able to hinder his transfer and on occasion designate officials of their choice. The increased smuggling of wood increased the demand for wood. Deforestation is an inexorable trend since fulfilling the demand for wood demanded bulky-gauge timber transport. Officials and the Timber Mafia Collaborate 10 Forest officials and the wood mafia were discovered collaborating. The wood mafia was aided by high-ranking forest officials with secret ties to them. On the ground, it was also seen that forest officials were surreptitiously collaborating with the timber mafia. Not all lower-level authorities were aware of the timber mafia's relationships with forest officials. A case study was conducted in which an innocent bystander was employed to observe the conspiracy between timber mobsters and forest officials. On a freezing winter evening, one of the forest authorities who was a key informant was phoned by his volunteer informant to report that a significant quantity of wood is being loaded into a tractor-trailer. To verify the location of the seen loaded truck, my informant requested that I accompany him on his visit. Although the vehicle passed the forest checkpoint, it lingered there for some reason. Since midnight is the most busy time for the timber mafia, the primary source believed the automobile may leave at that time. Since it is lawful to sell and harvest eucalyptus, it was determined that eucalyptus had been added to the lumber. We loitered in front of a hujrain a convenience shop. Simultaneously, a colleague reached out to the main informant to check up on him. He related the storey to a colleague. His boss ordered the primary informant to leave the area and return to his post in record time. He indicated that a substantial amount of timber would be carried illegally. He was fortunate enough to locate it. In spite of his objections, he was forewarned of potential ramifications on the grounds that the site of his intended operation exceeds his jurisdiction. It was evident that his efforts would not influence the authorities or his colleague, so he gave up. He demonstrated his disinterest and pessimism by announcing gloomily that "the whole department is sold" upon his return to his desk. In this case study, several assets were mortgaged. The first assumption is that lower-ranking forest officials were unaware of their bosses' nefarious contacts with the timber mafia. Second, forest officials are linked to unlawful logging activities. The vast bulk of

wood was carried through road. Without the cooperation of forest officials, smuggling vast amounts of timber from one district to another, or even from one province to another, is difficult. Checkpoints dot the paths leading from the dense forest to the wide plains. Despite the presence of spies operating covertly in the area, deforestation and the illicit traffic in forest-derived timber continue unabated. The Art of Real Estate Investment Locals' desire to expand their property holdings has been demonstrated to be a direct cause of deforestation. Eighty percent of area people who regularly cut down trees were financially stable, according to a poll. They claimed that two to three members of every household were working in the Gulf States abroad. They believed that they did not destroy forest resources for survival concerns or basic needs, but rather to maximise profit. They added that if other residents removed trees, their revenue would increase relative to theirs, and they would fall behind in the race to maximise their property value. In addition, they feel that one's value and esteem in the present day are defined by their worldly things. If they do not join the throng and cut down trees, they will be deprived of vehicles, cement houses, hujras, delicious food, clothes, and other movable and immovable things. To attain the aforementioned objectives, they participate in tree cutting and join the economic rat race. 13 - Considering Forests a Portion of Their Family's Estate Some of the villagers we talked with also said that their forefathers had the legal right to cut down trees, use the wood for building, or sell it during difficult times. Locals have the legal right to participate in commercial logging, cattle grazing, house building inside the forest, and adjustments to pedestrian and vehicular traffic. In recent years, the state has stripped them of all of their rights. Government officials usurped the forests of their forefathers. After the government bought the forest legally, the previous owners lost all rights to the forest's resources and shares. They see deforestation as a public expression of their anger at the government for robbing them of their rights without recompense. They are entitled to the advantages of these woods since their forefathers owned them. The government, on the other hand, is removing their children's rights while granting them to the offspring of Sama's elites (plain areas). When asked if it is permissible to cut down trees, a representative sample of the local community asserted vehemently that what they do in the woods is not prohibited. They continued by stating that these forests are a gift from their ancestors and that only they should benefit from them. Since their rights have been hijacked by the government, it is their obligation to restore them by all means necessary. Insolence (No. 14) Pakhtuns are famously stubborn and disagreeable (Macedo,et al., 2012). Typically, when one person adopts a strategy for making money, the other follows suit, perhaps with greater zeal. The same was true within the academic field. Locals believe that if one individual takes down a tree for financial gain, his family and neighbours will follow suit. Polled residents in the region all had the same worldview. Because of the villagers' callousness in chopping down trees, there was a considerable lot of deforestation. 15) Social Disarray Social organisation is one of the most significant variables in the growth of a civilization (Rafiq, 2003). In the location where we performed our research, there was a lack of social cohesiveness. Seven locals were questioned in a poll if they felt the community had ever been properly organised. The trees were saved by the villagers, who would intercede to prevent anybody from chopping down even a single tree, stressing to them the aesthetic significance of the woodlands. Additionally, the forests offer grazing area for their animals and building materials. The villagers threatened to cut off all communication with the woodcutter when he failed to comply with their request. The woodcutter stopped chopping down trees for no other reason than he feared being abandoned. Modern culture has thrown this community into disarray. Those who did not live in caves or on islands were often separated from the rest of the community. Few individuals will intervene if someone begins to cut down trees. Various

types of conflicts arose as a consequence of these interventions. According to a credible source, a local attempted, attempted, attempted, and attempted to abduct a visitor a month ago. Despite his injuries, he survived the attack. When attempting to stop a local from chopping down trees, he made a simple mistake. However, similar to the past, the community did not support the person who want to stop deforestation. He, like with everyone else, was labelled a government operative. It is perplexing that, in the modern era, locals tend to support tree-felling opponents over woodcutters. As a result of the changing conditions, nobody takes action to stop deforestation. The region's deforestation was inevitable due to the social disorder that presented a danger to its forest resources. Recommendations and Closing Considerations The native variables influencing deforestation in the study area were meticulously examined. In addition to the various reasons mentioned in the literature, the indigenous factors discovered in this study were of the highest importance. The country's beautiful forests might be turned to a stony wasteland if these underlying concerns are not identified and remedied. Moreover, it revives the anticipated national warming. This ecological and financial catastrophe was aided and abetted by the local populace, the forest department, politicians, and the timber mafia. Forest service officials are in league with common tree cutters and the timber mafia. Locals and the timber mafia are given carte blanche to chop down trees and smuggle them out of the country. The forest department officers get political support from both the local populace and the timber mafia. The Forest Service appears to be deferring to lawmakers and acting helpless in the process. Despite this, the majority of members of the wood mafia, locals who felled trees, hoarding site owners, and transporters who transported timber had backdoor connections with forest department officials. For the preservation of the nation's natural resources, ecology, and economy, a concerted effort to halt deforestation is required. Based on previous findings, the following recommendations are provided to prevent further deforestation in Dir Valley. The government must guarantee that individuals have access to alternate fuels like as gas and coal. Land ownership should be clarified immediately for both local inhabitants and the government. Local and national officials that conspire with the timber mafia or aid in the illegal logging of forests should be dissuaded from continuing their unlawful activities. The illegal timber industry, including sawmills and lumber distributors, should face severe penalties. Finally, it is advised that the government give forest people with employment opportunities or entrepreneurship programmes so they may swiftly establish alternative companies to cover their basic needs.

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Deforestation Dynamics in Pakistan: A Critical Review

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Abstract
Several factors and potential causes may affect the dynamics of deforestation in Pakistan. Vegetation abundance in Pakistan's capital city is examined here over a ten-year period. It's difficult to achieve forest goals when local initiatives and international obligations are at odds with one another. In light of the anticipated numbers for illegal wood harvesting in Pakistan, it is essential that the complexity of local forest contexts and the variation in policy performance be taken into account in future forest governance. This is why problem-oriented policy-learning pathways and policy grit are essential.
Causes, NGO campaigns, illicit logging, and deforestation are some of the keywords.

Introduction

As Pakistan's population has grown from 37 million in1947, the year it gained independence from India, to 180 million today, the country's forest cover has shrunk dramatically [2]. More than a million Afghans fled their country in 1979 when the Soviet Union invaded it. They found refuge in Pakistan, where they often lived in settlements carved out of the country's former forests [3]. Deforestation is mostly brought on by illegal logging. The quantity of wood consumed and the total quantity of wood obtained from State forests in Pakistan are the primary data points used to establish the amount of illegally taken wood. Four times as much wood was illegally harvested as was legally taken, it was found. It is anticipated that illegal logging will constitute a sizable portion of the underground economy [4]. Armed organisations have a history of unlawfully felling trees in Kashmir and Khyber Pakhtunkhwa. The Pakistan-Afghanistan border is utilised for the illegal transport of timber. The smuggled Afghan wood is then returned to Pakistan with a letter indicating that the wood is duty-free. The wood is shipped to Karachi and then on to the Gulf States after being smuggled into Pakistan [5] The. and..... Green space in Pakistan fell from 7 percent to less than 5 percent after Bangladesh gained independence in 1971. In2015, Pakistan's forest cover was 1.91 percent of its total land area, according to the World Bank [6]. Pakistan's percentage of forest cover has dropped over the last 25 years, from 3.28 in 1990 to 1.91 in 2015. Pakistan is in a terrible situation, with only 2-5 percent of its original forest cover still standing [6]. The establishment of Margalla Hills National Park is wreaking havoc on Islamabad, one of the world's most environmentally conscious cities. Yellow sapwood that is twisted and ankle-high is all that is left after clearing out forested areas and vacant lots [7]. The use of game models is one method for estimating the amount of illegal wood and for figuring out how to control illegal forestry activities. There is a black market for timber in the underground economy. The global underground market economy generates $1.8 trillion annually, of which $70 billion comes from illegal logging, as shown in Figure 1. Pakistan's illegal logging industry alone is worth $782 million, and the country's overall contribution to the black market economy is over $6.53 billion. The annual illicit wood harvesting[8] is used to get these figures. Since Pakistan has lately seen a large decline in its green cover area, the dynamics of deforestation are the topic of this inquiry. Analyzing the variation in the green cover area of the MHNP in particular and the impacts of deforestation on the environment, society, and government were the objectives. a. the a media. the a world. a media. a. an a. a.

Forest Degradation in Pakistan: A Condition
The majority of Pakistan's forests are situated on public land.
Private forests and public (state-owned) forests are the two types of forests (not state own) (not state own) (not state own). Public woods are

further split into reserve and protected zones, whilst Guzara woodland makes up the bulk of private forests. The forest is divided into three sections in order to clearly demarcate the different types of trees and the people's rights to them. About 27% of the total land area is covered by production forests, while 72% is covered by protection forests [9].

Concerns regarding deforestation from the past and the present

There is a massive imbalance between the supply and demand prices. A review of historical and contemporary wood consumption reveals that, while supplies were 18 percent below average in1993, they were 25 percent above average in 2013 [10]. Illegal logging has resulted in the theft of substantial quantities of wood from public forests in numerous locations. Population growth, according to the Theory of Himalayan Environmental Degradation (THED), is putting more pressure on the mountain environment of the Himalayan region. Rapid urbanisation of lowland areas is also influenced by the incompatibility between wood supply and demand [11]. Due to the government's inability to establish an effective institutional framework for forest management, the percentage of land covered by forests has been declining. The close relationship between private forest contractors and forest officials, which facilitated illegal logging, is another important factor in the decline of forest cover [12].

The Value of Understanding How to Manage Forest Destruction in Pakistan

This essay examines government initiatives that continue to result in insufficient net gain from the forest and the effects of a failed forest on Pakistan's forest management. The inadequacy of the federation's system for guaranteeing the use of natural resources is believed to be the main cause of deforestation in Pakistan. Listed below are some examples: There was a significant conflict between the federation and the forest communities as a result of the government's rejection of the preexisting procedural structures that governed resource utilisation comprehension. Due to the unequal degree of government control over forest resources, a system of conflicting property rights is currently in effect. Thirdly, because governments were penalised for failing to make state land available for social identification, effective forest management became an impossible objective.

Materials And Method

Monitoring the Margalla Hills' Forest Cover

In Pakistan, where there are already few forests, deforestation is one of the major environmental issues. In this investigation, forest cover has been tracked remotely over the last two decades. This climate change and its effects have been traced to Margalla Hills National Park, which is responsible for the alteration in forest cover. Two distinct pieces of software, ArcGIS 10.2 and ERDAS Imagine 9.1, were utilised to monitor spatial and temporal analyses. The findings suggested an increase in several types of land development. The observed Forest class is a coniferous forest. The results of the investigation have led to the conclusion that immediate conservation measures are required. The usefulness of GIS tools in assisting Pakistani officials to identify the conifer forest cover has been demonstrated repeatedly. Using the hybrid classification method, a previous study demonstrated a decline in conifers pine and deciduous forest from 1992 to 2011 using data from 1992 to 2011. It also provided a baseline for climate change-related damages, which may be useful for predicting future effects[13]. Section 2 of the fuelwood storage structures in Islamabad.

In this study, the types and quantities of wood found at Wood Taals are described in detail. Among the locations in Rawalpindi and Islamabad that were investigated were Said our village, Golara sharif, Pind Singrial, Meharabadi, G-8, G-9, G-10, I-8, I-9, I-10 sectors, Bhara Kahu, Bari Imam, and Khanna pul. For information on forest cover, it mainly used the MHNP household survey and forest guard interviews. The fifteen households in each community were picked at random.

Response And Discussion

The study claims that 20 or so Wood Taals were surveyed in Islamabad. Sheesham, Phulai, Ber, Kikar, Safeda, Toot, Poplar, Neem, Soru, Amaltas, and Jaman were among the woods discovered at those Wood Taals. On the Wood Taals, Kikar, Ber, Phulai, Sheesham, Neem, and Toot made up the bulk of the wood. The price of fuelwood was found to range between PKR 500 and 550 Mann, with the greatest price in G-8 being PKR 800/Mann and the lowest price in Golara sharif being PKR 350/Mann. Customers of the Wood Taals were families, tandoors, daig houses, hotels, and marriage halls. Owner of a Wood Taal at Bari Imam said that the Saudi Embassy, Marriott Hotel, and Prime Minister House were his only consistent clients. It was claimed that the greatest season for the selling of fuelwood was the winter season from January to February. However, one owner said that he had established year-round clientele who bought fuelwood from him, thus one season is irrelevant. After examining the type of wood present at the wood Taals, it was determined that Phulai from the parking lot (MHNP) had been discovered mixed with the group of woods at 7 Wood Taals. According to the proprietor of a Wood Taal, locals buy fuelwood from the Margalla Hills National Park and sell it for under PKR 100 per Mann. This research discovered that the best areas to buy fuelwood were "Daig Houses" close to the shrines of Bari Imam and Golara Sharif. The analysis concentrated on the fact that Margalla Hills National Park is most under risk from the Daig Houses of Bari Imam. The Capital Development Authority (CDA) has listed 264 instances in which the forest has been damaged in a report it submitted to the Supreme Court. From 2015 to 2017, those who were caught unlawfully felling trees paid penalties totaling Rs1.113 million to the Authority [14].

The Deforestation Situation in Northwest Pakistan

The myths and facts surrounding the deforestation occurring in Pakistan's Khyber Pakhtunkhwa (KPK) North-West Frontier Province were the topic of a research by Ali et al. [15]. It provided information from the perspective of the province's forest-dependent residents, including information on forest conditions, forest usage patterns, reasons contributing to an increase in illegal logging and forest depletion, and changes in forest cover. According to estimates, woods are losing around 39 hectares per year. According to predictions made using remote sensing technology, the majority of KPK's forests would completely vanish within 30 years as a result of a decline in the area's forest cover. The declining forests are primarily attributed to the local population of the region. Lack of knowledge, poverty, population explosion, overgrazing, extensive local tree cutting, rapid urbanisation, tree cutting for construction, a significant reliance of rural residents on wood for fuel and daily needs, and timber mafia are a few factors contributing to the decline of NWFP's forests. The Forest Department has prioritised the economic rather than the environmental benefits of the forest. According to the findings of the current research, roughly 90 percent of the local population uses wood from the woods for everyday necessities like cooking and heating. Fuelwood was widely utilised since the local inhabitants don't have surplus gas etc. Some of the villages had electricity as well, but it was very expensive and out of reach for the poor. Additionally, timber from forests was being utilised to build homes. The forest was subjected to an enormous quantity of grazing activities, all of which contributed to the destruction of the forest. The findings indicated a rise in unlawful tree-cutting over the previous five years. The forest department, which receives a substantial sum of money and permits the timber mafia to legally chop down trees, was responsible for the bulk of them. A few residents of the area participated in their illegal cutting. According to the information from a local person, the forest department is quite weak and the timber mafia here is very powerful. The majority of the locals are underprivileged, and their only remaining choice for making a livelihood is to chop down trees and sell them [15].

3.2. Forest Management in Swat Pakistan

The current research focuses careful attention to how corruption in Swat, Pakistan, contributes to

deforestation. The strategy of the "Crime and Punishment" approach was emphasised in the research; this method is not executed owing to an imbalance in an institutional setting. To stop corruption, a methodical institutional system should be in place. Corruption is common in many of the developing countries, Pakistan is one of them. The persons participating in such operations and true criminals belong to the law enforcement authorities. Witnesses who claimed that the forestry department and its officials are heavily involved in corruption in the forestry industry provided information for this study. Individual interviews and household surveys were conducted in the study in a few randomly chosen Swat villages. From household surveys, several individuals indicated that police personnel were implicated in corruption and after collecting bribes allowed the cars loaded of illegally chopped wood to pass. Forest officials as they have low salaries to support their families find such situations as an opportunity or they are forced to get involved in such situations just to support their families. We need a set of policies that aim at both environmental and socioeconomic goals. There should be a systematic approach to reform, with a particular focus on the forest sector [16].

3.3. Fighting Deforestation in Swat

Swat has a number of unique biophysical and social traits with Pakistan's high altitude Hindu Kush Himalayan area. There are different types of frangible and fragmented ecosystems in the region, but land cover changes have escalated process irreparable effects on the ecosystem. The primary goal of this research is to show evidence of deforestation in the context of various stories on Pakistan's forest resources, and it makes recommendations for changes to property rights, education, and community involvement. The temporal analysis of forest cover between 1968 and 2007 revealed a significant change in the forest cover. In high elevation areas, 69 percent change has been noted and in lowland areas change has been decreased to 36 percent. In the Swat district, we noted annual deforestation rate in (pine forest zone) 0.80 percent , 1.28 percent (agro-forest zone), 1.86 percent (scrub forest zone) due to deforestation ecosystem and connected livelihood [16]. By completing this research, the key point that was noticed in Swat was health and forest ecology was becoming harmed in the region and our approach was followed by performing household surveys and expert interviews. It was found out that lack of awareness is one of the main reasons and it arises due to lack of education, lack of substituted earnings. Some additional concerns discovered out were the difficulty in relating to property rights in forest area and lack of application of statute. As for a solution to this problem, we need to develop additional sources of income, increase agricultural production, and enforce state laws and regulations pertaining to the protection of forests through coercion. We also need to spread environmental awareness. In Pakistan, the amount of forest land is shrinking by 39 hectares per year. From 1981 to 1990, the rate of forest depletion was 0.6 percent per year; from 1990 to 2000, the rate was 1.5 percent per year. A survey from 2000 to 2005 revealed a 33 percent decline in the amount of forest cover in Swat District [17]. Remote sensing from GIS is used in conjunction with satellite images. In order to identify the socio-economic issues, a household survey was carried out with a sample size of twenty from each Village. The study covered two distinct time frames between 1970 and 2005. In relation to the ownership of property rights Quantitative analysis was taken place our questionnaire was open-ended. Significant deforestation has been observed in the Kalam, Malambjaba, and Barikot areas of the Swat district. The decline in the forest has occurred from 30.5 percent to 49.7 percent and 32.7 percent to 9.5 percent change in forest cover has been noticed from 1968 to 2007 [17]. According to household and community polls, the local community has not been granted permission to chop down trees, and as a result, the number of trees is dropping. Illegal logging is taking place as a result.

NGO Efforts and Government Projects in Pakistan 3.4 3.4.1. WWF Tree Campaign with Islamabad United

A gathering was held in Fatima Jinnah Park, Islamabad, on February 13th, 2018 by the World Wildlife Fund and the Islamabad United cricket team. The primary goal of the event was to make Pakistan greener and cleaner because of the rise in global warming and the general change in climate. Orange and Amaltas trees were planted by both contributing institutions. In2018, WWF pledged to assist Islamabad United plant roughly 1,400 native trees. According to NASA and NOAA's records, 2017 was one of the three warmest years on record, a fact relayed by Director-General of WWF Pakistan, Hammad Naqvi Khan. Therefore, it is necessary to create a connection between humans and the natural world, and to also bring sustainability as a responsibility to fulfil. He also mentioned an important fact: Pakistan has Asia's highest rate of deforestation, with only 2.5 percent of the country covered in trees. In a densely populated area like Islamabad, the plantation is essential for mitigating climate change. The Executive Director General of the Capital Development Authority (CDA) discussed the many ways in which trees benefit society, including the fact that they are an integral part of maintaining a thriving ecosystem by providing shade, food, shelter, medicine, water, timber, clean air, and so on. He also said that forest needs to be kept and valued as not only it aids in lowering carbon emissions and the associate livelihood of the community and we need to identify this with the growth in climate change connected to the global environmental agenda. Islamabad United's owner, Mr. Ali Naqvi, has said that the team shares his view that improving the world around us is essential if we want to alter our collective future. He continued by expressing his delight that cricket players and ambassadors were supporting the cause. He went on to say that ten trees would be planted in his honour if Islamabad United took a wicket in the PSL, and one tree would be planted for every run his team scored. The captain of Islamabad United, Misbah ul Haq, recently commented on the impact of climate change and global warming on various sectors of the economy. The Billion Tree Tsunami, 3.4.2

The "Billion Tree Tsunami" initiative aimed to enhance forest protection and growth in KPK in light of the government's ardent efforts to increase forest cover. The objective of this project was to increase the proportion of forested land in KPK province from 20% to 22.0% by 2018. It is necessary to strike a balance between preserving the existing forest and developing new, larger areas beneath it. This proposal would include the planting of an extra 30,000 hectares of woodland. By 2018, the world's forested area will have grown by between 20 and 30 percent. If achieved, these targets will ensure the protection of trees and the annual planting of 27,000 hectares. The Billion Tree Tsunami Project has four years to fulfil its aims. Ecopreneurs are being created on a limited scale across the province. The "Youth Nurseries" project of the provincial government encourages villages to construct small nurseries with 20,000 to 25,000 plants, with the assistance of the forest department, so that local youth can earn between Rs. 12,000 and Rs. 18,000 per month [17]. As traditional forest stewards, the local community has been tasked with preserving and enhancing the forest's health. They have reached an agreement with the government that will allow them to employ and teach locals (who will be referred to as "Forest Nighabans") to work in their woods. As a consequence, more work possibilities are provided for kids and forests are better maintained. The federal government intends to establish regulations, and the provincial government is working to end these activities by eliminating all government-based funding and support for the mafia, implementing harsh punishments, adopting a zero-tolerance stance, and enhancing satellite-based real-time monitoring. This project will assist Pakistan by reducing soil erosion, increasing the availability of water, and enhancing its resistance to climate change-induced floods. Contributing to global efforts to minimise greenhouse gas emissions and storing carbon underground for future use are global advantages of this programme.

Plans for Forestry Action Developed by the Group of Eight

In1998, the G8 established an action programme on forests that focuses on five global forest-related issues essential to achieving sustainable forest management. These action plans will have an influence beyond Pakistan, since they may contribute to mitigating the global effects of climate change.

Measurement and Record-Keeping

Members of the Group of Eight have worked to improve numerous initiatives, such as those aimed at preventing forest fires and identifying illegal loggers. The G8 nations defined the requirements for the auditing system and gave cash to assist poorer countries expand their manufacturing capacity. G8 members supported the creation of the World Fire Web initiatives and the international network for the mapping of active fires and burned areas. They participated in the efforts of the Global Fire Monitoring Centre, which provides information on fires around the globe.

3.4.5 Government-Run Projects in National Forests

National forest programmes (NFPs) that are more robust will assist developing nations in achieving SFM. Members of the Group of Eight (G8) agree that public involvement is vital to SFM. The government, indigenous people, forest owners, environmental groups, researchers, and other interested parties will work together to develop NFPs in an attempt to strike a balance between competing environmental, economic, social, and cultural demands placed on forests.

3.4.6. Safeguarded Areas

By utilising technology, nations are able to remain informed about their global neighbors, thereby increasing their awareness of shared resources. All children should have access to clean water, pure air, and healthy forests, not just those in one country. Therefore, the protection of the world's forests is the central subject of the G8 action plan on Forests.

3.4.7. Private Sector

Working with private organisations will provide citizens from all segments of society with the best possible options. International forestry firms, academics, labour representatives, and conservation organisations work together to resolve disputes and develop a common understanding of the significance of forests. G8 nations are leading efforts to prevent or reduce illegal logging worldwide. The G8 partners' research on wood DNA analysis will prove useful for detecting and preventing forest crimes. To ascertain the permission of gathered logs, methods are being developed [18].

Conclusions

The goal of the current study was to identify information gaps and determine the effects of deforestation drivers in order to develop a hypothesis for deforestation control in Pakistan. By developing scenario visioning the problem of deforestation can be solved. By keeping an eye on the rate of illegal harvesting, a policy for forest growth is required. Other options, such as afforestation and demarcating forest boundaries, particularly those close to nearby residential areas, should also be taken into account. It is the essential requirement of the day to design the deforestation management policy.

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Mental Healthcare in Pakistan

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Abstract:

Mental healthcare is an important aspect of healthcare that is crucial to individuals' wellbeing, as mental health is equally as important as physical health. It has become a major public health concern as it affects individuals, families, and society as a whole. Mental healthcare encompasses a wide range of interventions, including pharmacotherapy, psychotherapy, and behavioral therapies, that aim to improve mental health outcomes. The purpose of this research article is to provide an overview of mental healthcare, its significant impact on mental health outcomes, and the various interventions that are available.

Introduction:

Mental healthcare is an umbrella term that refers to the medical care and treatment of those with mental health conditions. It encompasses a wide variety of interventions, ranging from medical management to social and community support programs. Global statistics reveal that 1 in 4 individuals will struggle with a mental health problem in their lifetime with one of three people in sub-Saharan Africa, the Middle East or Southern Europe experiencing a mental disorder every year. Mental illness can be broadly classified into different categories, and these categories have various subtypes depending on their severity, symptoms and duration.

Mental health conditions can occur for a variety of reasons, ranging from environmental (e.g. exposure to abuse, trauma or to unhealthy living conditions) to genetic (inherited) and a range biological, environmental, social and cultural. Mental healthcare aims to support individuals in managing these challenges and improve the quality of their lives. Effective mental healthcare requires a combination of cultural knowledge and sensitivity, knowledge of mental health disorders, and the use of appropriate interventions.

Methodology:

The methodology employed in mental healthcare varies widely depending on the mental health condition and individual needs. The most common interventions used in mental healthcare are medication, psychotherapy, and behavioral therapies. Antidepressants, antipsychotics, mood stabilizers, and other medications are often prescribed in the treatment of mental illnesses. In addition, psychotherapy and counseling provide individuals with an opportunity to work through their emotions and learn strategies for coping with symptoms. Finally, behavioral therapies, such as cognitive-behavioral therapy, can help individuals modify maladaptive behaviors, beliefs, and thought patterns.

Mental healthcare providers in different countries work in varying contexts and can be approached using different care models. For instance, the Assertive Community Treatment Model (ACT), a form of intensive case management, is typically used for individuals who frequently require emergency mental healthcare services. The Stepped Care Model provides multiple levels of treatment, with the least intensive interventions used first before increasingly more intensive interventions are employed. Mental healthcare providers also

typically use screening tools and standardized assessments to determine the suitability of different interventions and to monitor treatment progress.

Access to mental healthcare is a significant challenge for many individuals globally, and different countries approach it differently. Low-resource settings are often limited in their options, with some countries integrating mental healthcare into primary care services.

Discussion:

Mental healthcare faces several challenges, including stigma surrounding mental illness, limited funding and resources, barriers to access, and a lack of understanding of mental illness. In many cultures, mental illness is often perceived as a weakness or a result of personal failures rather than as a health condition. Consequetly, many individuals avoid seeking help due to this stigma.

Furthermore, financial barriers to mental healthcare services limits access for many individuals, especially in low-resource settings. Limited funding and resources within the healthcare system may result in long waiting lists, untreated conditions and high costs for individuals. Improving mental healthcare globally requires policy solutions and increased funding, bolstering from workforces of healthcare providers specialised in mental healthcare, and society working collaboratively between to eradicate stigmatization of mental health issues.

Another significant challenge in mental healthcare is the lack of understanding of mental illness. Unlike many other health conditions, mental illnesses are not always easy to diagnose, as they may not have definitive biochemical markers or diagnostic tests available. Furthermore, the symptoms manifested by mental illnesses may overlap with other health conditions or may themselves have diverse subtypes classified through compela phenotyping of biological, environmental and contextual factors.

Finally, access to mental healthcare services poses a significant challenge in many areas worldwide. In some low-resource areas, access may be limited due to the unavailability of healthcare facilities or a shortage of healthcare staff. Furthermore, social and economic barriers such as poverty, discrimination, access to basic human needs, war and or conflict could impact negatively on access, bringing higher health-seeking behavioral trends in such communities. Digital mental healthcare plays a role in meeting these gaps, especially in low and middle income countries.

There is a need to invest in mental healthcare workforce in various regions, improving expertise in diagnosis and effective management of mental illness. Multi-level efforts including ongoing capacity development initiatives for mental healthcare providers, continuous interdisciplinary partnerships in mental health provision and a rapidly expanding workforce of professionals working on mental health-care have potential for long-lasting positive impact on the global populations.

Conclusion:

Mental healthcare is an essential aspect of healthcare. It is a critical public health issue as it encompasses several aspects of individuals' lives and has ramifications beyond the individual level. Effective mental healthcare requires comprehensive care, including medical management, psychotherapies, support groups, and interventions aimed at modifying unhealthy behaviors, beliefs and thought processes. Adequate policy and funding all over the globe can positively influence the effective deployment of

resources and spaces, as well as enhance management capacities of those involved in mental care, increasing capacity for effective health interventionsupport.

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COVID-19 vaccine hesitancy: Pakistan struggles to vaccinate its way out of the pandemic

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Abstract:
COVID-19 has been ravaging the world for over a year, causing widespread illness, death and disruption to the global economy. The development of vaccines offers hope for a return to normalcy, yet vaccine hesitancy remains a significant obstacle in achieving herd immunity. This article explores the root causes of vaccine hesitancy and strategies to encourage vaccination uptake.

Introduction:
The COVID-19 pandemic has highlighted the critical role that vaccines play in controlling infectious diseases. However, with the world's busiest pharmacies in steady supply of vaccines, vaccine hesitancy has become a major roadblock in achieving population immunity. Vaccine hesitancy refers to the reluctance or refusal to accept vaccination despite the availability of an effective vaccine.

Although the factors driving vaccine hesitancy are varied, they all share common themes. These include insufficient information about vaccines, mistrust of medical authorities, and concerns about vaccine side effects. These factors can be heightened by social and cultural norms, access barriers, and current events.

To provide a comprehensive assessment of COVID-19 vaccination uptake, data from over 160 countries was collected and analyzed through internet surveys. The overall rate of vaccine hesitancy varied between regions, with some countries reporting more than half of the population being hesitant about receiving a COVID-19 vaccine. Results further indicated that people from low to moderate-income countries were relatively more hesitant compared to those from higher-income countries.

Furthermore, hesitancy was found to be more prevalent in women compared to men, which could be attributed to the fact that women are generally less trusting of doctors than men. Interestingly, people who identified as opponents of vaccination were found to be more likely to refuse a COVID-19 vaccine compared to other demographic groups.

Discussion:
This research has shown that vaccine hesitancy is a persistent problem that requires a multi-faceted approach to solve. Education is likely to be a key strategy for encouraging vaccination uptake, particularly in low-income countries, where access to accurate information may be limited. Engaging and educating the public on the efficacy and safety of vaccines is especially important.

Targeted efforts to address vaccine hesitancy should also consider the influence of cultural norms and community trust in healthcare professionals. Tailoring information and communication strategies to specific cultural populations, could have a positive effect on vaccine availability and acceptance.

Finally, rolling out new economic policies aimed at encouraging vaccine uptake, such as granting access to businesses or certain cities only to vaccinated people need to create a new incentive for people to get vaccinated.

Conclusion:
Vaccine hesitancy poses a significant obstacle to achieving herd immunity against COVID-19. Addressing the root causes of vaccine hesitancy is crucial for improving vaccination uptake rates. Research has shown that education, targeted communication strategies and incentives are likely to be effective in improving vaccination rates and reducing hesitancy.

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Importance and Utilization of Incinerator for waste management in hospitals

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Introduction:

Hospitals are places that generate a large volume of waste on a daily basis. Medical waste can be hazardous and requires special treatment for disposal to prevent harm to the environment and human health. One of the most effective and efficient methods of medical waste management is through incineration. This study aims to explore the importance and utilization of an incinerator for waste management in hospitals.

Methodology:

This study is based on extensive research conducted through secondary sources such as peer-reviewed articles, reports, government documents, and statistics. The vital in reducing the spread of infectious diseases, and most importantly, they provide a safe and effective way to dispose of sensitive documents, chemicals, and blood products. Hospitals which do not employ an incinerator for waste management may cause harm not only to the environment but also to human life. Without efficient waste management methods, hospital waste poses a significant threat to public health.

study utilizes a qualitative approach to provide an in-depth understanding of the importance and utilization of an incinerator for waste management in hospitals.

Results:

Incineration has proven to be a cost-effective, safe, and efficient method of medical waste management for hospitals. By utilizing incinerators for waste management, hospitals can ensure the safe disposal of infectious and hazardous waste materials. Incinerators can reduce the volume of waste by as much as 90%, which means fewer trips to the landfill site, and this way, hospitals save costs involved with frequent pick-ups and transportation of waste. Incineration also reduces the environmental impact of waste by minimizing the exposure to hazardous materials.

Discussion:

Incinerators provide a perfect solution to hospitals for managing their waste efficiently and finding an eco-friendly way of disposing of hazardous waste. They are

Conclusion:

The utilization of incinerators in hospital waste management processes is essential to ensure efficient, reliable, and environmentally friendly waste disposal. Implementation of an incinerator ensures that the waste is appropriately identified, sorted, collected, transported, and treated; essential processes because

medical waste tends to be dangerous and contains infectious agents. Incineration is a vastly superior solution to other methods that used to be used, and hospitals must maintain additional standards, including environmental and social responsibility.

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Fig: Incinerator at Holy Family Hospital

Frequency and Health impacts of playing modern digital games in section of youth population living in urban areas of Rawalpindi

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Abstract

Materials and Methods: The study was conducted in Rawalpindi, from March to November 2022. It was a questionnaire based qualitative cross-sectional study under the consent of students. 309 volunteer students between age of 14 to 22 years were included in this study. Data was collected from students of schools, non-medical colleges and universities.

Results: Out of the total sample, 68.8% were males and 21.68% were females. Gaming caused significant vision problems among age 18 to 22 years. Other physical symptoms such as neck and shoulder pain were also observed in the same age group. Most of the individuals from HSSC played video games because they felt lonely. Impacts on mental health were more pronounced in males. An association between PUBG and certain mental health parameters such as the need to play more was observed. Social health impacts were more prevalent in males, and HSSC students.

Conclusion: According to the results, the impacts of modern digital games on all three dimensions of mental, physical and social health of youth are noteworthy. A multifactorial approach should be adopted to spread awareness among youth regarding the deleterious effects of playing digital games. This should include integrated, appropriate awareness programs for students, school officials and parents along with interactive and counselling sessions.

Introduction

Digital games are the most rampant and accepted means of entertainment in society. The addiction to the rivalry and excitement of the games makes them the most comfortable niche for today's teenagers. Digital games started in 1972 with "Pang", a computer tennis game, with time games were developed in hardware and software systems such as computer, handheld devices, and video games consoles.

According to a study conducted in Indonesia, most of the digital games were online games.[1] Online games are gradually replacing other social activities like study, family events and outdoor sports.[2] There is evidence that prolonged screen-based activities are common among adolescents, and associated with adverse mental health consequences, including depressive symptoms and poor quality of life.[3] The reasons for adolescents ' attraction to these games include being excited and easily accessible while authorities and families do not have any proper plan for the youth's leisure time and there aren't quite many options for their entertainment.

It has been highlighted that 18% of online game players reported financial, health, relational and work problems caused by playing online.[4] Psychologically, internalizing and externalizing behavior is related to insomnia.[3] Depressive symptoms and suicidal thoughts are associated to screen time induced poor sleep, digital device night use, and mobile phone dependency. ADHD-related behavior is also linked to sleep problems, overall screen time, and violent and fast-paced content which activates dopamine and the reward pathways. Early and prolonged exposure to violent content is also linked to risk for antisocial behavior and decreased prosocial behavior.

Psychoneurological effects due to addictive screen time include decreased social coping and involves craving behavior which resembles substance dependence behavior. Brain structural changes related to cognitive control and emotional regulation are associated with digital media addictive behavior. Many researchers have assessed frequency and health impacts of modern digital games on youth in different regions of the world. Like in other regions of the world, online gaming is very prevalent but a very few studies conducted in the youth population of the twin cities of Pakistan to identify its physical and psychological impacts.[5] Health professionals need to assess these parameters to minimize the burden and free the youth from the havoc created by the digital games. The games have affected many aspects of their lives such as education, sporting capabilities and interaction.

Materials and Methods

Study Design: It was a qualitative cross-sectional study.
Study Duration: From March 2022-November 2022.
Study Population: Youth population of Rawalpindi
Inclusion Criteria: Young males and females, aged 14 to 22
Exclusion Criteria: Those related to field of medicine, Diagnosed cases of Chronic Generalized Anxiety Disorder & Depressive Illness
Sampling Technique: Non-random conveniencee sampling
Sample Size: Sample size was calculated using WHO Sample Size Calculator for Proportion. Keeping margin of error as 05% and confidence level 95%, sample size comes out to be 309.
Data Collection: Data was collected through administering the questionnaire to (N=309) participants that was designed after literature review.
Data Analysis: Data was entered and analyzed using SPSS Version 26. Mean and Standard Deviation was be calculated for numerical variables like age. Frequency and Percentages were calculated for categorical variables like gender and impacts on physical, mental and social health. Chi- Square Test of Significance was applied to calculate P-values. P-value equal to or less than 0.05 was considered statistically significant.

Results

Socio-demographic Variables of the Study:

A total of 309 respondents participated in the study, out of which 234(75.7%) were males and 75(24.3%) were females. 151(48.9%) participants were 17 to 19 years old, while 108(35%) were 20 to 22 years old. 158(51.1%) participants were doing HSSC, while 79(25.6%) were doing Bachelors 68.81% of the study population were males who played video games and 21.68% of the study population were females who played video games (Figure 1). 55.66% of the individuals who played video games were 17 to 20 years old, and 46% of the gamers were doing HSSC (Figures 2 and 3 respectively)

Impacts on Physical Health:

Gaming caused vision problems such as blurred vision {*p value* 0.007}, eyestrain {*p value* 0.004}and dry eyes among ages 18 to 22{*p value* 0.035} (Figure 4.) It also caused other physical symptoms such as neck pain {*p value* <0.001}, shoulder pain {*p value* <0.001} and wrist pain {*p value* 0.033}in the same age group (Figure 5.)

Impacts on Social Health:

Most of the individuals from HSSC played video games because they felt lonely {*p value* 0.007} (Figure 6.) More males got angry while playing video games as compared to females {*p value* 0.016}, and

males tended to insult their co-players more {*p value* 0.041} (Figures 7 and 8 respectively.) Individuals who played PUBG felt that they needed to play more {*p value* 0.026}, and spent a lot of time thinking about the game {*p value* 0.025} (Figure 9.) Individuals who had a gaming time increase of <4 hours could not get enough sleep, and took sleeping pills {*p value* 0.003} (Figure10.)

Discussion

Digital games have become an extremely popular leisure-time activity with more than **two billion users** worldwide. Excessive video gaming has undermined the potential dangers of this habit and its impact on physical, mental and social health of its users. With our research, we have aimed to shed light on these impacts. For this purpose, questionnaires designed after careful literature review, comprising of physical, mental and social health aspects were administered to find the correlation between digital gaming and its impact on health.

In our research, we have examined the physical, mental and social effects of playing digital games on early adolescents (14 years), late adolescents (15-17 years) and early adults (18 -22years). The physical effects assessed in our research were eye problems like blurred vision at near and far vision, dry eyes, eye strain and tried eyes as well as muscle pain like pain in shoulders, neck, arms and back. Our results showed that these problems were in direct relation with the gaming frequency. These complaints were reported more in males than females, the reason being longer screening time in males with prolonged periods being spent in a same posture for a long time which leads to muscle rigidity and pain along with the eye problems. The increase in gaming frequency leading to these physical problems also corelated to COVID-19 pandemic during which digital games emerged as a pastime to enjoy with friends and family online as a means of social distancing.[6] A Research about video games and their associations with physical health conducted in Canada reported weak association between gaming time and musculoskeletal pain. This was in contrast to our findings and may be attributed to insufficient evidence for the association. Another limitation of this research was a small sample size and heterogeneity. Other reasons can be the difference in types of games played by the subjects and gaming time.[7] One study about effects of prolonged continuous computer gaming on physical and ocular symptoms and binocular vision functions in young healthy individuals conducted in South Korea reported that prolonged continuous computer usage for gaming resulted in both physical and ocular discomfort as well as changes in binocular function. In particular, the neck and shoulder, which remain in the same posture while playing, were affected. The major visual symptom was ocular fatigue (tired eyes) followed by dryness and blurred vision. This was in alignment with our results for the same variables. This again can be attributed to increase gaming time and having same posture for a prolonged time. Computer screens emit blue light which is damaging to the eyes and can be a source for the eye problems.[8] One research held in India reported that physical problems related to neck, shoulders, and backs were the most affected regions among the computer users after the ocular symptoms.

The mental effects focused in our research were lack of self-control, sleep problems, aggressive behavior, mood swings, frustration and loneliness. These problems were reported more in males particularly in early and late adolescents than in females as gaming frequency was more in males and this age group was more susceptible to the mental effects because individuals in this age group

are going through various behavioral changes, exhibiting autonomy and independence. Similar to our research,[9] international research conducted in the city of Isfahan also reported that digital games had a negative impact on the mental health. They reported aggressive behavior, feeling worthless and antisocial personality effects of digital games more in males than in females. This was similar to our results because males are more interested in digital games than females and males especially early and late adolescents get electronic devices at an earlier age and were exposed. Also, another[10] research conducted internationally reported that children developed a growing dependence on digital games which was similar to our variable of children not being able to say no to play more games. This can be attributed to the reason that playing games gave them pleasure and took their mind off from their surroundings, offering them a route of escape.[11] International research conducted in Germany about the association between video gaming and psychological functioning reported low self-esteem and preference for solitude as well as poor school performance particularly in early and late adolescents and more in males. This was also in align with our results for the same variables. The reason being that they spent too much time playing games alone without much social interaction with the real world so they tend to lack the socially interactive skills and prefer solitude as well as develop low self- esteem. Since digital games take up most of their time, they were left with little to no time for the academic activities which resulted in poor school performance.[12] According to research in Iranian journal of public health, a study conducted revealed increased gaming frequency in males compared to females which was again similar to our results for same variable. The reason cited by this research was that female spend more time messaging and surfing across websites, whereas male used computers for gaming purpose. They also reported that the score of loneliness increased as the score computer games addiction increased which was similar to our result for the same variable.[13] Another international research concluded that duration of sleep in the digital gamers is lower than that of a healthy person. Increased screen time had negative impact on sleep quality and duration as well as increased usage of sleeping pills which was similar to our result for the same variable. The reason for this, in scientific aspect, was that, blue light emitted by the video screen blocks the release of melatonin, which is important for the start of sleep cycle, thus disturbing the natural cycle of sleep. The natural biologic rhythms of the body are also disturbed when a person constantly stays awake till late in the night and the body adapts to such routine, thus natural sleep patterns are disturbed and the person ends with sleep problems. Coming towards our findings regarding social impact of digital games covered in our research were reported as that most players reported that playing games did not affected their social interaction with their friends and family. However, most players did report that they were advised to play less games. Also, the gamers responded that gaming did not affect their studies.[14] A research about impact of video games on social intuition among teenagers conducted in India reported that cooperative video games may increase prosocial behavior and cooperation among players and

promote quick decision making and improve cognitive flexibility. The reason for this can be that modern games involve online interaction between different players from any part of the world which provides them with an opportunity to interact with each other and enhance their social skills.[15] A research about impact of playing video games on the social behavior and academic performance of medical students in Taif city conducted in Saudi Arabia reported poor academic performance amongst students who were addicted to video games and spent more hours on playing. Also, video games adversely affected the academic achievements amongst students. This can be because medical students have more academic burden than school and college going students who were the subjects of our research and also in our research school and college going students lived with their parents who kept them under their supervision and maintained a check and balance.[16] Similar research reported that most individuals who were addicted to video games showed lower social skills. This might signify that most persons addicted to playing online games had a fear of real social contact or interactions and couldn't face social situations so they preferred virtual interactions through video games. This was in contrast to our results for the same variable because the setup of our research was different from the mentioned one. Also, Saudi Arabia is a developed country as compared to our country and there are many online social platforms where people interact whereas in our setup most people lack access to such virtual platforms and prefer face to face interaction.[17] Another research about online games on adolescent social behavior conducted in Indonesia reported that adolescents find it more difficult to mingle in social reality and prefer to play online games. This was also in contrast to our finding and the reason can be that in this research mostly subjects were influenced by peer pressure and preferred online games to social interaction whereas this was not reported in our setup.

Conclusions

According to the results, video games have major impact on the physical, mental and social health of youth.

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Indoor Air Pollution: Knowledge, Attitude And Practice Among Residents Of Rawalpindi

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Abstract

Introduction: Indoor air pollution is concerning because 90% of person's time is spent indoors. Main source is solid fuel burning containing pollutants (i.e CO, NO & PMs). According to WHO, almost 3 billion people rely on such fuels and thus have increased risk of COPD, chronic bronchitis & lung cancer. Poor ventilation and humidity increase chance of disease. Our research aims to rectify this situation so as to provide information on current situation of this issue in Rawalpindi.

Methodology: A cross-sectional descriptive study was conducted on 168 houses having male-female ratio of 5:7 on residents of Rawalpindi. We did consecutive non- probability sampling. Pre-validated performa was prepared and information was obtained after taking written informed consent regarding socio demographic characteristics, knowledge, attitude and practice regarding indoor air pollution. The data was entered and analyzed by using SPSS-V 22.

Results: Out of 168 participants {70 males (41.7%) and 98 females (58.3%)}, about 61 participants (36%) did not have any symptoms;43 participants (25%) suffered from headache;39 participants (23%) had sneezing and 25 participants (15%) suffered from cough. Regarding knowledge, 138 participants (82.1%) were aware of indoor air pollution related hazardous impacts.115 participants (68.4%) knew using gas stoves can cause lung problems.149 participants (88.7%) were aware that indoor smoking is injurious to health. 161 participants (95.8%) were aware that paint fumes cause respiratory problems. Regarding practice, 141 people (83.9%) do indoor air cleaning once weekly. About 125 people (74.4%) were using gas stoves. There is no significant difference of knowledge between males and females.

Conclusions: It is concluded that air quality of Rawalpindi area is affecting the residents. However, the affected people are quite less as compared to unaffected.

Keywords: Indoor air pollution, Knowledge, Attitude, Practice.

Introduction

Indoor air pollution is dirt, dust/gases in air inside buildings i.e homes and been linked to sick building syndrome, reduced productivity and impaired learning in schools. In certain houses, there are increased number of individuals who complain of non- specific symptoms including headache, fatigue, throat infections and shortness of breath.

While most people are aware of the effects of outdoor air pollution, relatively few people know of the detrimental effects of indoor air pollution (IAP). According to the World Health Organization, an estimated 4.3 million premature deaths annually are accounted for by household air pollution (HAP).[1] This is especially concerning due to the

fact that on average, 90% of a person's time is spent indoors,[2] with the very young and older adult population spending even more time indoors.

Major causes of indoor air pollution are the sources that release gases/particles in air. The main source of indoor air pollution in developing countries is solid fuel burning. Pollutants associated with SF include mostly polycyclic aromatic hydrocarbons (PAHs), particulate matter (PMs), nitrous oxide (NO), carbon monoxide (CO), and sulfur dioxide (SO_2), with their concentrations being two- to threefold higher in indoor environments.[4] These compounds are present in solid fuels (SF) such as wood, coal, crop waste, animal dung etc. According to a report by WHO, almost 3 billion people worldwide rely on such polluting fuels (wood, coal, crop waste, animal dung, or charcoal) paired with inefficient stoves for cooking and heating.[5] Other sources of indoor air pollution include: passive exposure to tobacco smoke, radon decay products(mainly from ground under the building), building materials(asbestos containing insulation, flooring ,carpets etc.) ,products used for household cleaning and personal care, central heating and cooling devices and biological processes i.e mites, molds etc.[6]

In developed countries, tobacco smoke is a major source of indoor particulate matter, accounting for 50–90% of indoor PM concentrations in high- income countries.[7] Usage of gas stoves was found to increase pollutant exposure, with a study indicating each hour of gas stove or furnace use was associated with an 18 ppb increase in 24-hour NO_2 concentrations.[8] Cleaning supplies, paints, insecticides, and other commonly used products introduce many different chemicals, including volatile organic compounds, directly into the indoor air .[9]

State of housing and fuel used in households are major determinants of indoor air pollution.[10] Mountain ranges and coast lines can cause air pollutants to concentrate in or disperse from an area. So, houses near sea/coastlines have decreased temperature and thus reduce air pollution because of land breeze carrying the pollutants along with them from land to sea.

Indoor air pollution poses no. of public health concerns worldwide. As a result, due to indoor air pollution, mortality rates and incidence of respiratory and CVS diseases has increased with alarming rates. Immediate health concerns include irritation of eyes, nose and throat, headache, dizziness and fatigue. Chronic exposure to pollutants can lead to pulmonary tuberculosis, nasopharyngeal and laryngeal carcinomas, cataract, asthma and most importantly lung cancer.[11]

A study based on 19 cross-sectional studies and five case-control studies revealed that the risk of COPD and chronic bronchitis was 1.38 times higher in women exposed to SF smoke than in those exposed to clean fuel.[12] A study conducted in Peshawar, Pakistan, reported that biomass fuel combustion was strongly associated with chronic bronchitis in women. The study found a significant and positive association between chronic bronchitis and wood smoke, rice straw, dung cakes and living room cooking.[13]

Exposure to indoor particulate matter (more specially the coarse fraction), NO, and mouse allergen are important determinants of asthma morbidity in urban environments.[14]

Indoor emissions from household

combustion of coal are carcinogenic to humans (Group 1), inducing lung cancer. Indoor emissions from household combustion of biomass fuel (mainly wood) and high-temperature frying are probably carcinogenic to humans (Group 2A), with biomass being a probable risk for lung cancer.[15]

In India, studies showed that long-term exposure to smoke from solid fuel burning was associated with the development of adenocarcinoma of the lungs in women with no smoking history.[16] In Nepal, those who were exposed to HAPs showed considerably higher risk of lung cancer associated with increasing duration of exposure from biomass combustion, particularly among never-smokers.[17]

In low- and middle-income countries, a significant amount of premature deaths are attributed to indoor air pollution due to the use of SF.[18] Furthermore, infant deaths were significantly associated with coal usage as fuel in the indoor environment.[19]

Methodology

Study design: A cross-sectional descriptive study

Study settings: Rawalpindi Medical University.

Study duration: 8 months. Starting from March 2022 till October 2022.

Sample size: The sample size was determined through WHO calculator sample size. Sample size in study was 168.

Sampling Technique: Consecutive (Non- Random)

Study population:

Inclusion Criteria: Those people who are willing to participate in research.

Exclusion Criteria: Those people who are having any terminal illness.

Data Collection Tool:

A self-structured questionnaire was prepared

Questionnaire is divided into following sections:

1. Informed Consent.
2. Demographic Details/ Personal Profile.
3. Evaluation of knowledge.
4. Evaluation of attitude.
5. Evaluation of practice.

Data Collection Technique:

Data collection was started after approval from ethical review board of Rawalpindi Medical University and was

done after taking informed written consent.

Results

Demographic Profile of The Study Population: In the study to assess the knowledge, attitude and practice about indoor air pollution among residents of Rawalpindi city, 70 males (41.7%) and 98 females (58.3%) out of total 168 participated (Table no. 1).

The age distribution and the other demographic details are depicted in Table no. 1.

Age , mean {S} = 23.45±3.455			
		N	***%***
Gender	Male	70	41.7%
	Female	98	58.3%
Residence type	Colony	55	32.7%
	Mohallah	69	41.1%
	Society	44	26.2%
	< 50k	25	14.9%

Main symptoms of the participants: Participants agreed that they or their family members had symptoms due to indoor air pollution (cough, headache, and sneezing). While some participants also said they have no symptoms. Percentages of the individual symptom are shown in figure no.1

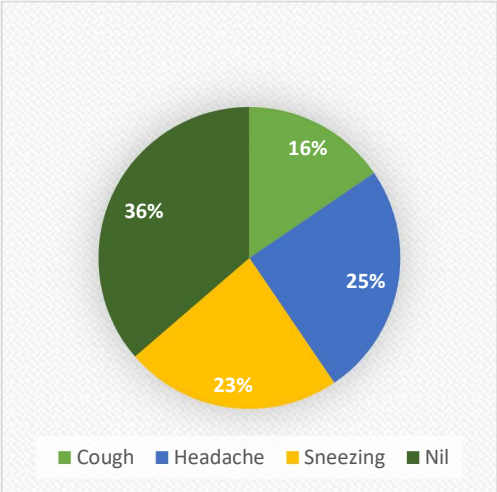

Figure no.1: Symptoms seen in participants

Knowledge about indoor air pollution: Most of the participants were aware of the indoor air pollution. Those who knew indoor air pollution is hazardous to health were 82.1% and using gas stoves affects lungs 68.4%. Maximum participants (88.7%) thought smoking inside house is injurious to health. Knowledge about paint fumes can cause respiratory problems was maximum (95.8%) (Table no.2).

Discussion

Indoor air pollution (IAP) is responsible for many health, environmental, and social issues that disproportionately and adversely affect women and young children around the world. Nearly half the world's population burns solid fuels (e.g., coal, biomass, and animal dung) as their principal household fuel for cooking, heating, and lighting. IAP in these households was estimated to be responsible for almost 2 million premature deaths in 2001, and represented approximately 3% of the global burden of disease. In addition to direct effects on IAP and health, carbon dioxide and black carbon emissions from burning solid fuels are also important contributors to global climate change. In particularly vulnerable regions, women and young girls are subject to attacks by militia and rebels during extended periods of foraging for fuel to use in inefficient cook stoves. Widespread improvements in cook stove and other combustion technologies could ensure greater safety for, and provide more time to, hundreds of millions of women to engage in other social and economic activities that improve their lives and the lives of their families and communities.[20]

The key finding of this research is that there is fairly good knowledge among residents of Rawalpindi city about indoor air pollution. In our study, level of knowledge among females is more as compared to males which is in against to study conducted in Cameroon which shows females are just as aware about indoor population as males.[21] The difference may be due to the relatively smaller sample size of our study.

In our study, 82.1% of the participants know that indoor air pollution is hazardous to health. In a similar study conducted in Rawalpindi and Islamabad, 95.1% know indoor air pollution is detrimental to health[22]. The difference is due to the smaller sample

area of our study.

In our study, 94.6% know that using wood or coal as fuel causes breathing problems. In a similar study conducted in Rawalpindi and Islamabad, 96% know that there is link between indoor air pollution and respiratory diseases. [22]
In our study, 88.7% thought that smoking inside house is injurious to health. While in a similar study, 78% thought that indoor smoking may cause health problems.[22] This is because due to extensive awareness from government, now people are more aware to injurious effects of smoking.

In our research, 68.4% know that using gas stoves affects lungs. While in a similar study 59.2% thought gas stove is the cause of indoor air pollution.[22] This is due to the fact that now people are more educated and well aware.

Amegah and Jaakkola[23] and Pilishvili et al.[24] observe that for homes, execution of building standards and improved home ventilation through education are the most important—and in many instances the only feasible—ways of achieving improved indoor air quality. However, it must be noted that for the population studied in the current research, education does not seem to have made much difference. Research into the dynamics that influence the decision to involve or desist from involving in polluting practices is needed In many studies it has been shown that stove is the main cause of IAP [25] which correlates with our study.

A study conducted in India puts forward that cough, phlegm production, shortness of breath, wheezing, common cold, and throat congestion are prevalent in houses where there is a family history of smoking concluding that indoor air pollution has an association with respiratory function of children.[26]

In order to control IAP measures should be immediately taken which might save our world from hazardous effects of IAP. In developing countries like Pakistan there should be awareness camps and educational conferences regarding indoor air pollution to educate people and to make Pakistan a healthier place to live and making it save for next generations. Using Chimney stoves, avoidance of smoking, using less harmful construction material can help decrease harmful effects as together we can make this place a better place.

Conclusion

It is concluded that although the air quality of Rawalpindi area is affecting the residents. However, the affected people are quite less as compared to unaffected.

Recommendations

Actions to decrease household air pollution in developing countries should also help to obtain important SDG targets. Prosecution of the *WHO indoor air quality guidelines on household fuel combustion* is strongly recommended and requires WHO to provide strong technical support to countries through their regional and country offices. This will help gain a very important health-related SDG target. Governments should aim to adequately resource environmental protection agencies to effectively take up the task, and in countries where no such agencies exist, they should be supported by development partners to establish an agency.

We recommend constructing biogas plants in metropolitan areas especially, where the animal waste seems readily

available. Proper execution of this recommendation requires collaboration between energy ministries and local government authorities in the countries concerned and will drive water and sanitation targets. Governments should also get technical and financial assistance, both locally and externally, to expand LPG production facilities and distribution networks and to exercise their renewable energy potential. These acts will help achieve important sustainable energy and consumption, and climate change targets.

Designs of new homes should feature mechanical systems that bring outdoor air into the home. This will improve the ventilation of the house. Ventilation can also help control indoor temperatures. Ventilation also helps remove or decrease indoor air pollutants coming from indoor sources. This will decrease the level of contaminants and improve indoor air quality (IAQ).
Ventilation is necessary in every home's kitchen. Have good air flow ventilation system in your kitchen. Install a vent system or open a window and use exhaust fans during and after cooking. By installing kitchen exhaust systems in older homes, air pollution goes down. New homes should be required to have ventilation for kitchens

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