

Health Security Threats of VBDs in KP, and Islamic Concept of Cleanliness: Case Study of Dengue and Zika Viruses

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Abstract:

The global health security community is serious about the health security of human beings across the world. Disease in modern globalized world has no frontiers. The vector-borne diseases are serious health security threats to human beings and animals alike in South Asia generally and in Pakistan and Afghanistan particularly. The recent repatriation of Afghan citizens from Pakistan to Afghanistan will pose severe health security threats to the dwellers of Afghanistan due to poor health sector and on-going war on terror in Afghanistan and poor health governance provided they are not immunized against various diseases. Islam is the religion of cleanliness which protects its believers against all diseases including vector-borne diseases.

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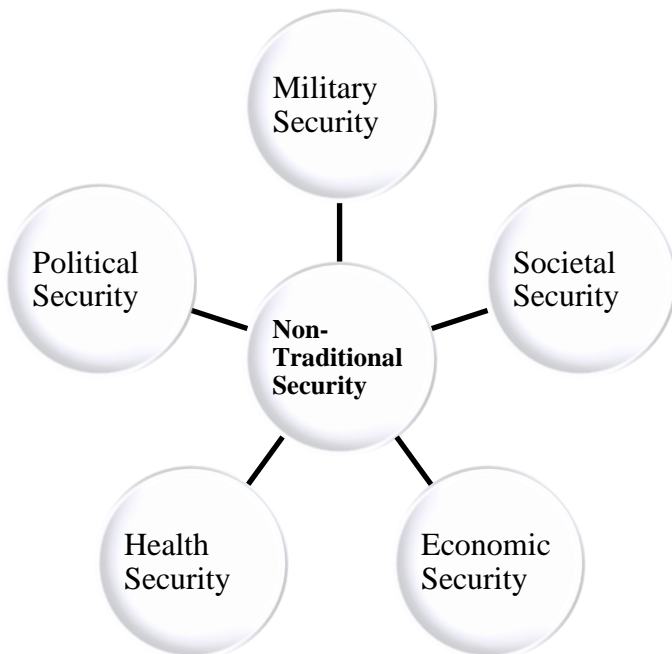
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Conceptual Framework of Health Security:

In primitive ages, health and security were kept apart. The lethality of diseases in modern globalized world has attracted the attention of the global health security community to securitize human beings against various diseases. In Traditional Security paradigm, pathogens, diseases and warfare are closely connected concepts.¹ In Non-Traditional security paradigm, human security is emphasized.

In 19th century, the trade relationship between Europe and other nations created health security concerns among the policy makers in Europe of possible infiltration of diseases to their community. The global community started to frame health regulated laws for the securitization of Europeans. However, Gro Harlem Brundtland and Richard Holbrooke had the credit to link health with security and foreign policy.² Robert Cox considers the term security as a contested concept. In the Traditional School of Security (TSS), state is a referent object. Simply, security of state or military security is the epicenter in TSS. Contrary to this, in the Non-traditional School of Security (NSS) individual is a referent object.³ Health security comes under the purview of human security or non-traditional security paradigm.⁴ Barry Buzan broadened the concept of security by including political, economic, societal and environmental instead of largely focusing on military security (Figure-1).⁵

Figure-1 Various Perspectives of Non-Traditional Security Paradigm



The non-traditional security is based on J. L. Austin's 'Speech Act Theory'.⁶ Ole Waever says that a societal security is about situation when a society perceives a threat in terms of identity.⁷ This theory states that the audience in a society gives meaning to words as an existential threat which the securitizing agents also takes in cognizance to securitise such threat posed to a referent object⁸ by allocating and mobilising all resources against the functional actors.⁹ From health security perspective, if the audience in a society declares a particular disease caused by microbes, virus, bacteria, and Toxin as a threat to its life and the concerned government agencies recognise it, then such a threat will be interpreted as a human existential health security threat.¹⁰ Simply, threats are inter-subjective concept shared and held in common to understand action and behaviour.¹¹

The conceptual framework helps to understand the health security and all concepts related with it. It also enables to understand the referent object, securitising actors, functional agents and audience with reference to a particular disease.

Global and Regional Health Governance Regime

In 21st century, the rapid spread of infectious diseases across the world threatened the world community and built up consensus to prevent, control and respond to such diseases. According to World Health Organisation (WHO), "global health security is composed of those proactive and reactive activities mandatory to lessen a threat to acute public health events that jeopardize the collective health of population living across the world irrespective of geographical distinction."¹² Human health security has gained global recognition. The international health security community took into cognizance the lethality of communicable and non-communicable diseases particularly in the developing and under-developed countries. It made legislation for regulating health security and providing institutional mechanism to ensure a healthy society-free from diseases caused by either virus, bacteria or any other pathogen. A brief account of such legal and institutional mechanism at global and national levels is following.¹³

At the global level, United Nations took several steps to ensure health security. The United Nations General Assembly passed "United Nations General Assembly Resolution A/RES/68/98", on December 11, 2013. It aimed to draw close relationship between foreign policy of a state and global health. It urged the member states to take into account the health issues in their external policies. The international health security community recognized it as an existential threat to humanity across the globe which needed to be eliminated. It also endorsed best physical and mental health, high living standard, access to sufficient food, clothing and housing. Health security has national, regional and international ramifications. This resolution made headway to ensure global health governance based on principles of fundamental rights, rule of law, good governance and people-centric policy.¹⁴

Articles 21(a) and 22 of the Constitution of WHO empowered the World Health Assembly to adopt code of conduct for the prevention of spread of a disease in the world and bound the WHO Member States to take all necessary measures in such case.¹⁵ The 3rd World Health Assembly endorsed the eradication of Smallpox across the world and abolished the condition of vaccination for the travellers on May 8, 1980.¹⁶ From Article 2 to 13 of *IHRs, 1969* the health administration of the each member state was held responsible to share the outbreak of a disease and subsequent information about it with the WHO.¹⁷ These regulations exempted a person from charges for medical examination of issuing a vaccination certificate for the diseases¹⁸ enumerated in these regulations.¹⁹

The 22nd World Health Assembly adopted International Health Regulations (IHRs) on July 25, 1969.²⁰ Under Article 2 of IHRs, each signatory state is bound to implement the provisions of IHRs. The signatory is also bound to communicate information about outbreak of any disease to WHO within twenty-four hours.²¹ IHRs are a global health security contract among 196 nation-states. The signatories of IHRs are bound to ensure safeguard against the international spread of disease in collaboration with WHO. The success of IHRs depends on national capacities to detect, assess, report and respond to public health events before they cross borders. The study shows that forty member states have achieved the required core capacities by the target date of June 2012.²² After the emergence of some lethal infectious diseases like severe acute respiratory syndrome (SARS), the global health community after thorough deliberations amended *the IHRs, 1969*.²³

The 58th World Health Assembly adopted IHRs, 2005 on May 23, 2007.²⁴ It came into force on June 15, 2007.²⁵ The basic motives behind IHRs, 2005 are; a) to adopt preventive measures through initiating public health response to protect human beings across the globe against any disease, b) to bind legally all the state parties to build such a public response mechanism; c) to collaborate with WHO on eruption of public health emergency, etc.²⁶

On Feb 13, 2014, more than 20 states with the assistance of World Health Organisation, the Food and Agriculture Organisation (FAO), and the World Organisation for Animal Health (OIE) have laid the foundation of a 'New Global Health Security' (NGHS) agenda.²⁷ Indeed, the GHS agenda will help to implement International Health Regulations (IHR).²⁸

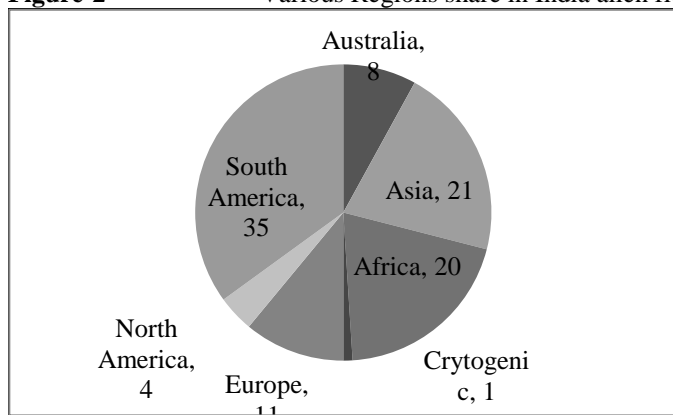
Global health-security policy makers took cognisance of animal health security and its impact on human being—a referent object. Global health community linked animal health with human health security. During 1800's, diseases like cholera, plague and yellow fever and their threats of transportation across the world remained under discussion.²⁹ First International Sanitary Convention, 1892 was adopted as International Sanitary Regulations to cope with such threats.³⁰ Later on, WHO adopted International Sanitary Regulations

in 1951 in conformity with related conventions and agreements and made them obligatory on its member states. Subsequently, the global health community revised these regulations and introduced with a new name ‘International Health Regulations’ and also laid the foundation of ‘the Office International des Epizooties (OIE)’ for animal health security.³¹

Pests or insects were used as a tool of agro-terrorism. The global security community has made Non-Proliferation of Global Agro-terrorism efforts to ensure the plant biological security. Pests may be used as weapons against plants, animals, and humans. Pests can be used to penetrate in any endangered area where they can play havoc. At global level, legislation has been made to counter the intrusion of pests in any alien locality. International Plant Protection Convention (IPPC), 1997 is the global effort to cope with this issue. IPPC makes obligatory on the signatories to issue phytosanitary certificate to ensure the protection of consignments of plants and their products. Similarly, it also obligates the surveillance of plants, their cultivation, growth, and the areas where these plants are cultivated. Under IPPC, the contracting parties to inspect the importation of plants and their products. Besides this, it also ordains for training and development of staff and of holding research and investigation in the field of plant protection.³²

The regional states are bound to protect plant, fruits and other agricultural crops from alien pests or insects by establishing regional plant protection organisation.³³ Reshi and Khuroo are of the view that: “The infiltration of alien pests or insects and their negative effects on agriculture sector in India is highly felt.”³⁴ India is also confronted with threats of infiltration of 1599 alien plant species belonged to 841 genera in 161 families.³⁵

Figure-2 Various Regions share in India alien flora



In the South Asian region, India legislated “*Agriculture Biosecurity Bill, 2013*” on March 11, 2013 to counter the spread of trans-boundary disease also pose incalculable risks to plants, animals, human beings and environment.³⁶ Pest management legislation is old in nature in Pakistan. ‘*Destructive Insects and Pests Act, 1914*’ was adopted under Governor General of Pakistan Order No. 04 in 1949 to cope with such insects which posed a threat to plants and crops in the country in the pre-independence period of Pakistan. The policy makers made efforts to protect plants, crops, horticulture and floriculture against pathogens, insects and diseases. At global level, the *Plant Protection Convention (PPC), 1951* under the auspices of Food and Agriculture Organisation (FAO) was introduced for this purpose. The government of Pakistan incorporated necessary amendments in the ‘Plant Quarantine Rules’ on September 15, 1962 to bring in conformity with PPC. These rules were consolidated in 1966 under the provisions of the ‘*Destructive Insects and Pests Act*’, 1967.³⁷

Vector-borne Diseases & Health Security

Pathogens and parasites cause illness in human beings. Vector-borne diseases (VBDs) have global health security threats. World Health Organisation (WHO) has listed various VBDs. According to WHO, such diseases claim the lives of One million out of One billion reported cases across the world. These diseases constitute 17% of all infectious diseases.³⁸ From 17th to 20th century, dengue fever remained one of the major epidemics. During 1950s and 1960s, the health security policy makers succeeded to control epidemic mosquito vector in Central and South American countries.

A. Case study of Dengue Virus

Dengue fever is second high health security threats after malaria with occurrence of 50 to 100 million cases.³⁹ Dengue is caused by a virus transmitted by infected vectors such as mosquitoes or ticks.⁴⁰ After the host is infected, there is a two-to-seven-days incubation period. After that, the host develops a fever, bone pain, anorexia, nausea, weakness, respiratory syndromes, and sometimes a rash. In several cases, the disease can progress to a dengue *haemorrhagic fever*, which has considerably high mortality rates than simple dengue.⁴¹ Dengue was also occurred in Brazil during 2007 and early months of 2008. It infected more than forty thousand people and killed several hundred. It demonstrated potential threats for large-scale outbreaks.⁴²

The dengue fever is global in nature. Vector-borne diseases are serious health security threat to 50% of the world population. In other words, 17% of all infectious diseases cause more than One million deaths annually. It is very

alarming that above 2.5 million people in more than 100 countries are at health security risk due to dengue fever.⁴³ IHRs give details about the precautionary measures against the vector of this fever. Article 19 of IHR ordains that all the peripheries extended up to 400 meters of ports or airports should be protected against the *aedes aegypti*. The surrounding areas should be cleaned from such vectors.⁴⁴

Dengue is a viral disease. Dengue virus infests and destroys the white blood cells in human body. The mosquito species *Aedes agyptii* and *Aedes albopictus* are the vectors to carry this virus. However, only the female mosquito bites humans and transmits the virus. The males are nectar feeders.

Situational Analysis in Pakistan

Dr. Michael K. Faulde also mentioned the following vector-borne Infectious diseases in Pakistan in addition to diseases mentioned in Table-1.⁴⁵ The people of Pakistan use to confront with heavy floods in monsoon season. These floods spread vector-borne diseases in different parts of the country. The government and other health agencies tried to cope with such health insecurity so as to minimise the chances of epidemics.⁴⁶ In 2012, the existential threats of Dengue fever forced the government to steps to securitise its citizens against it. The federal government with collaboration of provincial governments launched to prevent vector-borne disease particularly anti-dengue fever on August 27, 2012.⁴⁷ Dengue virus in Khyber Pakhtunkhwa province is taken as a case study to make the study more scientific and specific. In the prevailing circumstances, Dengue is a serious public health security issue problem in many areas of Pakistan. It has the potential to spread in no time in the rest of areas of Pakistan. Peshawar, the capital of Khyber Pakhtunkhwa, is the reservoir for breeding of fresh and turbid water mosquitoes.⁴⁸

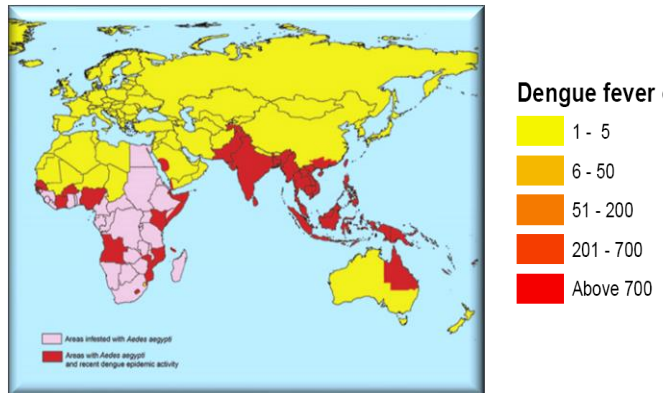
Table-1 VBDs in Pakistan

Diseases	Vectors
Bhanja Fever, Bhanja Encephalitis	<i>Hyalomma marginatum</i> , <i>H. detritum</i> (sheep ticks)
Dhori Fever Virus	<i>Hyalomma dromedarii</i> (camel tick), <i>H. marginatum</i> (sheep tick)
Chikungunya Fever	<i>Aedes aegypti</i> & <i>Culex</i>
Boutonneuse Fever	<i>Rhipicephalus sanguineus</i> (brown dog tick)
Siberian Tick Typhus	<i>Hyalomma marginatum</i>

Dengue has its own historical background. In Pakistan, it is emerged few years ago and has caused one death among 145 confirmed cases during 1995. Later, it has spread to the rest of areas of the country.⁴⁹ Dengue fever has claimed the lives of 41 persons in 2006, 18 in 2007, 17 in 2008, 13 in 2009, 40 in 2010 and 253 in 2011 in the country. The disease may be proved lethal and the mortality rate may go up provided adequate precautionary measures have not been taken in future.⁵⁰ Pakistan has been experiencing an epidemic of dengue fever that has caused 16,580 confirmed cases and 257 deaths in Lahore and nearly 5,000 cases and 60 deaths reported from the rest of the country. The three provinces facing the epidemic are Khyber Pakhtunkhwa, Punjab and Sindh.⁵¹

In Khyber Pakhtunkhwa, the Swat and its adjacent areas were affected by the outbreak of Dengue fever. Swat has seven Tehsils with almost 1.7 Million populations. In Swat, first case was reported on August 17, 2013. World Health Organisation took the sample and sent to National Institute Health, Islamabad. The reported cases were confirmed by ELISA⁵² report on 19th August, 2013. In 2013, 9038 reported cases are found positive. Dengue claimed the lives of 37 people in Swat.⁵³ Figure-3 shows the intensity of the Dengue fever cases in Swat.⁵⁴ It is also found that maximum numbers of cases were reported from Government health facilities. The private health facilities were either slow or reluctant to report.

Figure-3



Source: Source: Roll-Back Maria Control Programme

Fourteen thousand people were infected from dengue fever in which 5869 were males and 2677 females. By September 2013, sixty people were died of dengue virus. In Saidu Sharif Hospital, 4314 patients have been treated and discharged. In addition, ninety-one patients were under treatment in the hospital. Similarly, in Matta Khwaza Khel Hospital, 148 patients were treated and

discharged. Moreover, three patients were treatment in the hospitals. In private hospital, 364 patients have been treated and discharged, while five patients were under treatment in the hospitals.⁵⁵ **Table-2** shows the most red zone areas and less red zones areas with respect to dengue fever.

Table-2 Affected Union Councils (UCs) of Swat During 2013

Most affected UCs	Most affected UCs
Qamabr	Khwaza Khela
Odigram	Char Bagh
Amankot Faiz abad	Matta Kharen
Shahdara Nawakala	Bara Bandai
Malook Abad	Kuza Bandai
Tang Mohalla	Kuz Abakhail
Landykas Malakan	Kanju
Gul Kada	Dangram Sangotha
Saidu Sharif	Manglor
rahim Abad	Barikot
Banr Ingo Dheri	

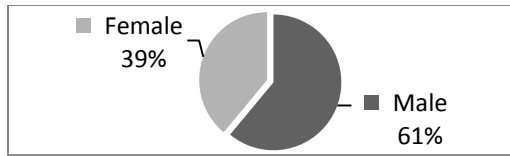
Dengue disease also penetrated into district Mardan. Two hundred and forty-two dengue cases have been reported. In which twenty-four dengue infected patients were under treatment and the rest of patients were treated and discharged.⁵⁶ In 2014, the first dengue infected case in Shah Dara of Mingora area has been reported in a woman.⁵⁷

It is very pathetic that the dengue cases in 2014 are also noticed on increase. By Sep 11, 2014 the total numbers of reported dengue cases in Khyber-Pakhtunkhwa are 154. Among these, 94 male and 60 female are affected. **Table-3** shows that majority of the dengue fever affected are found between ages of 15 to 30 years, i.e., 83. In other words, 61% and 39% male and female are affected people shown in **Figure-4**. The ratio of Dengue affected male is greater than that of female.

Table-3 Age & Gender Wise Dengue Cases (Sep 11, 2014)

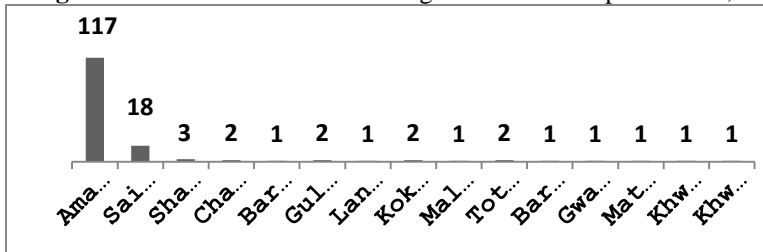
0 – 4		5 – 14		15 - 30		Above 30		Total		Aggregate
M	F	M	F	M	F	M	F	M	F	
0	0	8	6	54	29	32	25	94	60	154

Figure-4



The data shows that Amankot Faizababd is the highest dengue risked area where 117 people have fallen prey of dengue virus. Saidu Sharif is next in the high number of dengue cases occurrences. However, the occurrence of 154 cases is very alarming in District Swat. From Sep 11, 2014 to Sep 18, 2014, twenty three dengue cases occurred. Again the residents of Saidu Sharif, Amankot and Galooch were fallen prey to dengue fever.⁵⁸ Dengue fever continuously targeted the population in Swat from Sep 11, 2014 to Sep 20, 2014 as the number of dengue cases were accelerated and reached to 181 from 154. In nine days, twenty seven dengue cases were reported (Figure-5).⁵⁹

Figure-5 Union Council Wise Dengue Cases Till September 11, 2014

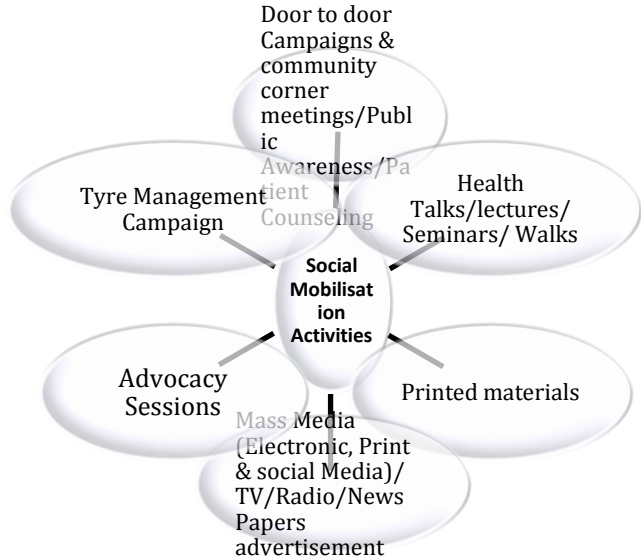


Dengue is still a looming threat in several areas of district Swat. Dengue virus infected fifteen residents of Amankot area in Swat by July 12, 2014.⁶⁰ By Sep 29, 2014, dengue fever cases reached to 209.⁶¹ By October 14, 2014, the dengue cases reached to 256.⁶² The data shows that since July 12, 2014 till October 14, 2014, 241 residents of various areas of Swat remained the victims of Dengue virus.

Keeping in view the intensity of Dengue cases in district Swat, the provincial government in collaboration with district health department of Swat took several steps to counter Dengue fever.

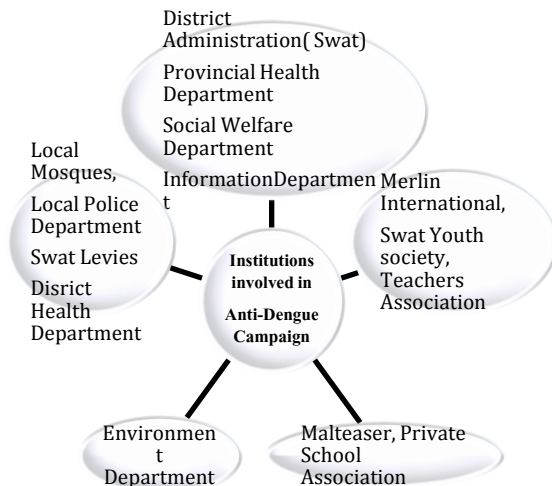
- The government has launched fumigation campaign. The administration fumigated every area of Mingora after every 4 to 5 days.
- Municipal committee’s staff deployed larva granules in dengue virus suspected areas.
- District administration has also imposed ban on used-tyres under Section-144 against tyre shops.
- The provincial government also initiated different steps for social mobilization throughout the province and particularly in the dengue affected areas. The **Figure-6** shows the details of the steps taken for the social mobilization.⁶³

Figure-6



The district and provincial governments established proper institutional frame-work to materialize the social mobilization initiatives. Various departments and institutions were involved to cope with the Dengue fever in Swat.⁶⁴ **Figure-7** shows the detailed list of various institutions engaged in social mobilization and anti-dengue campaign.

Figure-7



The situational analysis of dengue virus leads to a conclusion that it is a serious human biosecurity threat in terms of health security risks to the respective referent objects in KP. However, what factors hindered the global, national and provincial efforts to securitise the residents against dengue virus in KP

B. Case Study of Zika Virus

Zika viral disease is also one of the vector-borne diseases. It was first found in monkeys in Uganda in 1947. However, human beings were fallen prey to it in 1952 in Uganda and the United Republic of Tanzania.⁶⁵ Like Dengue disease, *Aedes aegypti* mosquito causes this disease. Zika can affect a foetus in a pregnant mother which may cause birth defects in a baby. According to Centre for Disease Control and Prevention (CDC), this specie becomes aggressive during day times and at night. The vaccine or medicine to treat Zika is unavailable.⁶⁶ According to CDC, majority of people are found unaware about Zika virus. The illness lasts to a week. Fever, rash, joint pain and Conjunctivitis are some of the most common symptoms of Zika.⁶⁷ According to Columbia's National Health Institute, Zika virus affected 20,297 people.⁶⁸ WHO has issued a warning that Zika virus is explosively spreading and can affect 3 to 4 million people during 2016 in America. Zika virus has severely targeted children in Brazil where 3,718 children have fallen to microcephaly⁶⁹ since the occurrence of this disease in October 2015.⁷⁰

In Pakistan, Zika virus affected case has not been reported.⁷¹ However, the threat of outbreak of Zika viral disease has been realised in the country. The provincial government of Khyber Pakhtunkhwa has declared threat of spread of Zika virus in nine high security risk districts. It has also demanded fund to counter such looming threat in these areas. During 2015, about 2769 Dengue cases were reported in nine districts of KP. Various areas in districts Peshawar, Mardan, Nowshera, Abbottabad, Shangla, Hari Pur, Malakand and Dir have been declared as high Zika virus-risk areas. *Aedes aegypti*—the carrier of Zika virus and Dengue virus—can cause severe human casualties in these areas. The government also warned that such virus would affect pregnant women and growth of children. It can cause microcephaly in these areas.⁷²

Vector-borne Diseases: A Human Health security Threat

Study shows that VBDs like dengue fever has caused tremendous harm in terms of human casualties, financial loss and psychological fear in district Swat despite government initiatives. The study also showed several social, structural, functional, financial and natural challenges to counter dengue threat to the dwellers of Swat. Followings are some of them noteworthy.

First, the paucity of health facilities is noticed with the emergence of dengue fever in district Swat. The health administration has shown its

helplessness to provide all necessary facilities required for tackling the existing and emerging diseases. The District Headquarter hospital's authority had no fund to cope with the health insecurity posed by dengue fever.⁷³ Limited hospital surge capacity, technical expertise and logistics in both public and private health centers in short are main hindrances to counter the ongoing spread of dengue in Swat.

Second, the most alarming issue in the control of dengue disease is the unavailability of a globally accepted dengue vaccine. However the scientists are involved to make experiments so as to invent such vaccine.⁷⁴ Third, natural factors causing dengue fever also pose great challenge to health managers and policy makers. For example, continuous raining is not in the control of human beings. Over raining facilitate mosquitoes to find breeding places for their growth. Similarly, sudden warm weather force mosquitoes to come out and wreak havoc role with people's lives.⁷⁵

Fourth, release of sanctioned fund due to bureaucratic or managerial problems also aggravated dengue fever situation in KP. Unfortunately, it is released in July, 2014 after lapse of eleven months.⁷⁶ Field research manifested that in September 2013 the provincial government of KP sanctioned PRs. 59 million, however the release of this amount has fallen prey to bureaucratic intrigues.⁷⁷

Fifth, field study manifested that the health department has not conducted any fundamental research to unearth the outbreak of *Aedes aegypti* in the dengue affected areas.⁷⁸ Similarly, unhygienic environment is also a lingering problem in the control of dengue disease. The overall affected areas are found unhygienic and contaminated. The lack of civic sense also found one of such hindrances to prevent spreading of dengue fever. The general public shows irresponsible attitude to keep their surroundings cleanliness. They usually ignore the precautionary measures needed to be taken to control dengue disease.

Sixth, there is no proper arrangement for fumigation and anti-mosquito spray. The district administration has no adequate funds to provide basic necessities to local people.⁷⁹ It was done in the initial two or three days.⁸⁰ Dengue has gained the shape of epidemics. Many of the patients are deprived of nets. There is one diagnostic machine. People are lined up and waiting for hours for their turn.⁸¹ All the slogans are empty.⁸²

Seventh, the Provincial Health Authority has also shown its helplessness to provide required health equipment to those district hospitals where health emergency was proclaimed due to outbreak of dengue fever. The provincial health authorities are reported asked the officials of the health security-risked-districts to make arrangement by themselves to counter dengue fever.⁸³ The representative of the provincial government admits the lack of facilities in public sector hospitals and taking rapid and emergency measures. Mr. Saleem-ur-Rehman says:

The provincial government was not ready to cope with this type of crisis. We have lack of facilities and space in hospitals. These are old ones and unable to accommodate the outnumbered patients. The hospital management also shows indifferent attitude towards the solution of the problems of the patients.⁸⁴

Eight, import of tyres from Afghanistan through illegal routes also played role to spread dengue disease in the Saidu Sharif area of Swat, KP. The standing water in tyres was also found the cause of breeding place for dengue mosquitoes. The medical facilities were insufficient in DHQ hospital Saidu Sharif. The dengue affected patients were outnumbered of bed facility available in the hospital. The patients were lying in the verandas.⁸⁵ Ninth, lack of preparedness plans to manage the major outbreak—at all level, and in each sector is also observed as the facilitating factor for the abrupt spread of dengue in parts of the province. The rural areas are more exposed to dengue disease due to lack of public awareness and unhygienic conditions.

Tenth, poor coordination and poorly defined roles and functions among different government functionaries in the province resulted into duplication of efforts. This resulted in the poor performance of the institutions involved in controlling the spread of Dengue virus. This also led to lack of risk assessment for decision making and implementation in the face of rapidly escalating outbreak of the disease.

Eleventh, VBDs like dengue fever is considered as biosecurity threats. Dr. Syed Ghulam Mujtaba opined that: “there are looming threats of bio-insecurity in the province. It is evident from the recent eruption of Dengue fever in various parts of KP. Dengue virus disease has exposed the status and capabilities of the hospitals of KP that these are incapable to cope with any emergency situation. The government has failed to trace the real cause or causes of this disease. It also exposed the health sector that it could not be able to judiciously handle the problem. In normal days, treatment is provided to patients. However, in case of outbreak of any disease, the provincial and district administration will not be in a position to control the epidemic due to lack of huge quantity of vaccination bank”.⁸⁶ He further added:

The constitutional steps had been taken to decentralise health sector to provinces under Eighteen Amendment of the 1973 Constitution. Despite this autonomy, it brought no fruitful results. In addition to this, there is wide political interference in the administrative affairs of the health centers. This too hampers the work of the health functionaries to implement health reforms in letter and spirit. Moreover, there is wide range of corruption in our society which is evident from the poor performance of the anti-corruption body of the country, i.e., National Accountability Bureau.⁸⁷

Twelfth, the dengue fever is a viral disease spread by the bites of mosquitoes. Dengue fever has been the intense focus of American army and its spy agency pathogenic warfare researchers for over fifty years. As early as the 1950s, the army’s Fort Detrick in partnership with the CIA launched a multi-million dollar research program under which dengue fever and several addition exotic diseases were studied for use in offensive biological warfare attacks.⁸⁸ However, the medical investigative agencies have failed to identify the real cause of the spread of Dengue virus in Pakistan.

Lastly, mobilisation or migration of people from one place to another place also poses health security threats to new area of settlement. The influx of Afghan refugees to Pakistan after Soviet invasion of Afghanistan created tantamount burden on Pakistani society. It created serious health security issues for the indigenous people of Pakistan because the hospitals, basic health units, sewage, drainage system, and residential areas were short fallen of the requirements. It worsened the sewage and drainage system in Pakistan. Laurie Garrett rightly says that: “Urbanization and global migration have brought drastic changes in the behaviour of mankind and also environmental relationship between pathogens and human beings.”⁸⁹

Afghanistan is a war-torn country. Global war on Terror has dismantled the health infrastructure in Afghanistan. The poor public health management has alarmingly generated serious VBDs in Afghanistan. Dr. Michael K. Faulde mentioned the following vector-borne Infectious diseases in Afghanistan (Table-4).⁹⁰

Table-4 VBDs in Afghanistan

Disease	Vector
Crimean-Congo Hemorrhagic Fever	<i>Hyalomma marginatum</i>
Dengue Hemorrhagic Fever	<i>Aedes aegypti</i>
Sand Fly Fever	<i>Phlebotomus papatasi</i>
West Nile Fever	<i>Culex mosquito</i>
Sindbis Fever	<i>Culex modestus</i>
Japanese Encephalitis	<i>Culex and Anopheles mosquitoes</i>
Boutonneuse (Mediterranean) Fever	<i>Rhipicephalus sanguineus</i> (brown dog tick)
Siberian Tick Typhus	<i>Dermacentor silvarum and D. marginatus</i>
Mite-borne Typhus (Tsutsugamushi Fever)	<i>Leptotrombidium deliense, & L. akamushi</i>
Louse-borne Typhus, Epidemic Typhus	<i>Pediculus humanus</i> (body louse)
Trench Fever, Five-Day Fever, Wolhynia Fever	<i>Pediculus humanus</i> (body louse)
Murine Typhus, Endemic Typhus Fever	<i>Xenopsylla astia</i> (rat flea), <i>Pulex irritans</i> (human flea)
Epidemic Relapsing Fever	<i>Pediculus humanus</i> (body louse)
Plague	(Only urban rodent plague): Fleas
Tick-borne Relapsing Fever	<i>Ornithodoros tholozani</i>
Leptospirosis	<i>Brown rat, Rattus norvegicus, hogs, mice, livestock</i>
Malaria	<i>Anopheles fluviatilis</i>
Filariasis	<i>Culex pipiens molestus, Culex quinquefasciatus</i>

The VBDs are also found a serious health security threats to the deployed troops in Afghanistan and Iraq-both countries are suffered from internal anarchical situation. Leishmania threatened the US troops in both in Afghanistan and Iraq.⁹¹

Pakistan hosted the huge population of Afghan people for more than three decades.⁹² The growing insecurity in Pakistan has forced the policy makers to repatriate Afghans to their homeland. On June, 2016, the Government of Pakistan extended right to residency by December 2016.⁹³ The mobilisation of repatriation of about 1.5 million Afghan people to their homeland will generate serious public health problems in Afghanistan⁹⁴ The people of Afghanistan are already confronted with weakest health infrastructure facilities. They use to come to Peshawar, the provincial capital of KP for treatment. The incidents of Congo virus in Afghanistan manifested that health sector in there is not up to the expectations of Afghan people.⁹⁵

National Policy Recommendations

There is no iota of doubt that the government at provincial and district levels has tried to discuss the issue of biosecurity threats emanating from dengue virus.⁹⁶ The preceding study reveals that there is lack of any proper vaccine to combat the threats of Dengue. However, it can be prevented to an optimum level by adopting the following recommendations:

First, serological surveillance should be a necessary component of all dengue interventions and a standard entomological index should be utilized to support in the similarity of studies. Serological surveillance in the wild strains of *Aedes albopictus* needed to be assessed using Reverse Transcription-Polymerase Chain Reaction (RT-PCR) methods for confirmation of vector capacity.⁹⁷

Second, prospect research should be conducted using 'habitat management' as reduction of source. Research on the mechanism involved in the resistance of the vector strains to various agrochemicals should be studied at molecular level. Genetic bar coding is the new area of research to be explored in the identification of vector species.⁹⁸

Third, anti-vector borne diseases programmes need to be on air. Civic sense should be emphasised and promoted among the general masses. Government cannot get success to provide clean environment, to supply clean drinking water and to provide better drainage system unless the general public themselves change attitudes towards these issues and take steps to handle their garbage and other household wastes properly. Sewage water, scarp materials, ponds, pools and accumulation of water in containers are the most important favourable breeding places for nourishing mosquitoes. There should be proper

‘Sewage Management Mechanism’. The stagnation of water needs to be controlled.

Fourth, source reduction is an effective way by removal of artificial and natural containers or alteration of breeding sites in and around living or working areas should be taken into deliberation. Fifth, strong social mobilization should be ensured. Community should be involved to manage the population of different kinds of mosquitoes. For this, media both print and electronic Media should be utilised to create general public awareness about the preventive measures of dengue disease and about the possible repercussions provided it is penetrated in the area.

Sixth, the vector needs to be controlled. Eggs/Larvae/pupae are found in irrigation channels, pools, river banks, in various containers lying inside houses and lawns and potential breeding places (water tanks, scrap materials). These breeding places should be monitored on monthly basis so as to control vectors growth. Seventh, surveillance of infected persons is also needed. In addition, the use of repellents, mosquito coils and electric vapour mats to prevent mosquito bites, use of insecticide treated nets are helpful to protect children, pregnant women and elderly people from the disease. There should be an exhaustive research on the virus to make a breakthrough in eradication of the disease.⁹⁹ The work plan developed for dengue control and prevention should be followed.

Seventh, local, districts, provincial and federal governments need to take cognisance of the areas where Afghan people were residing. The policy makers should take steps to introduce public health reforms. Sewage and drainage system systems should be made up to the mark.

Eight, public awareness programme needs to be launched against VBDs like Zika and dengue fever. Pregnant women and their male partners should strictly follow steps to prevent mosquito bites. To prevent sexual transmission of Zika, consider not having sex or use condoms the right way every time during pregnancy. If you develop the symptoms of Zika, see a healthcare provider right away for testing.¹⁰⁰

Ninth, the international community should focus on the health security of the repatriated Afghan refugees in Afghanistan. The World Health Organisation should take precautionary measures in Afghanistan. It should urge the government of Afghanistan to make proper arrangement for the settlement of its citizens. It should also make obligatory on Afghan government and other agencies involved there to ensure high standard public health facilities. Vaccination of these people particularly of women and children against various diseases should be ensured. In addition, better sewage and drainage system should be provided to these people so as to avoid or at least to maximise the chances of VBDs among them.

Lastly, there is also need to strengthen Disease and Vector Surveillance mechanism. Strong intra and inter departmental coordination is required to cope with dengue fever. There should be sincere support from Directorate of Health and decision makers. Technical team at program level for effective and coordinated activities should be established.

Islam & Prevention against VBDs

Islam is the religion of cleanliness. It teaches the lesson of cleanliness to its believers. It protects its believers from dangerous diseases like AIDS, Syphilis, and Rabbits, etc. According to Dr. Amanullah, ‘Preventive and Curative Medicines are two parts of the Medical Science. The former part deals with the protection of human beings against through various preventive measures. The latter part deals with cure or treatment of ailment. The Preventive medicine is better than Curative Medicine. Islam suggests measures like illegitimate sexual intercourse, homosexuality, and use of contaminated medical instruments like used-syringes, surgical blades etc, so as to protect the believers from AIDS’.¹⁰¹

Islam uses the word ‘Taharat’ for cleanliness. It has broader perspective and encompasses cleanliness of body, of mind, of spirit, and environment.¹⁰² Holy Quran says about cleanliness:

وَيُحِبُّ الْمُتَطَهِّرِينَ

“Allah loves those who purify themselves.” (The Cow: 222)

وَيُحِبُّكَ فَطَهِّرْ وَالرُّجْزَ فَاهْرُجْ

“And purify your garments. And keep away from Ar-Rujz (filth).” (Al-Muddaththir: 4-5)

Similarly Holy Prophet (Peace Be upon Him) also emphasised on cleanliness. He says:

لا تقبل صلاة بغير طهور

“Allah does not accept Prayer without purification”.¹⁰³

On another occasion, Holy Prophet (Peace Be upon Him) states:

أطهر شطر لايمان

“Cleanliness is half-faith”.¹⁰⁴

It is manifested from the verses of Holy Quran and Holy Traditions that Islam has too much emphasised on cleanliness in all its manifestations. It encourages clean environment so as to close the doors on eruption and spreading of any disease caused by pathogens or by vectors like mosquitoes.

Conclusion

Summing up, it may be stated that several factors as mentioned above are facilitating *aedes aegypti* to make victims the residents of Swat valley particularly, and KP generally. However, the most serious issue is the irresponsible attitude of the people sitting at helms of affairs towards curtailing this severe health security threat to the local people of Swat and KP. The delay in the release of health emergency fund for around eight months so as to counter the dengue fever speaks volumes of their insincere attentions. However, the above recommendations may help out the health administration to cope with the on-going proliferation in dengue cases in Swat.

It is manifested that migration or mobility of people from one place to another place is one of the factors to cause VBDs because the ailing persons play a role of carriers of the virus of such diseases from one place to another place. The people should make precautionary measures to cope with the menace. They should use mosquito nets and do anti-mosquito sprays. In the hospital, separate beds should be made available for dengue fever patients. In hospital, people should be facilitated according to available resources. Trained staffs should be deputed. Nets should be installed on beds. Paramedics, vaccination staff, lady health workers should be engaged in the campaign against dengue fever.

The government in Afghanistan and other aid agencies need to take serious notice of the health security of repatriated people. Otherwise, it will not pose health security threats to these people but also to those with whom they interact and even to the people of South Asian region. Restoration of peace in Afghanistan is also pre-requisite to focus on health sector and to allocate major part of national budget on it. It is need of the hour to build a separate and concrete national and regional mechanism to counter the threats of VBDs. Otherwise this virus may turn more dangerous in the coming years. In addition to these, strict adherence with Islamic teachings on cleanliness is also a panacea to cope with VBDs.

¹ Colin McInnes, "Health" in Paul D. Williams ed. *Security Studies: An Introduction* (London: Routledge, 2013), p. 324

² Gro Harlem Brundtland was the former head of the World Health Organization. Richard Holbrooke was the President Clinton's ambassador to the UN. Brundtland coined the term 'global health security' and emphasised public health keeping in view globalisation and chances of rapid transmission of disease from one corner to other corner of the world. Likewise, Holbrooke's efforts to place HIV/AIDS on UN Security Council's agenda gave him the title of 'the champion of securitisation of HIV/AIDS. See Ibid., pp. 326-327

³ Pauline Kerr, "Human Security", in Alan Collins' *Contemporary Security Studies* (Oxford: Oxford University Press, 2013), p. 104; For details see Robert Cox, "Social Forces, State and World Orders: Beyond International Relations Theory", *Millennium*, Vol. 10, No. 2, pp. 126-55; & Dr. Sverre Lodgaard, "Human Security: Concept and Operationalisation", Centre for Peace and Development Studies. The International Centre, Goa, India

(Available on <http://www.cpdsindia.org/conceptandoperationalization.htm> accessed on March 5, 2016)

⁴ J. Peter Burgess and Jonas Grans, "Human Security" in Craig A. Synder, *Contemporary Security and Strategy* (Palgrave Macmillan: New York, 2012), p. 91. Cited hereafter as Craig A. Synder, *Contemporary Security and Strategy*...

⁵ Barry Buzan, "Human Security in International Perspective", in Mely C. Anthony and Mohamed Jawar Hasan (ed.), *The Asia Pacific in the New Millennium: Political and security Challenges* (Kuala Lumpur: Institute of Strategic and International Studies, p. 583; Ralf Emmers, "Securitisation" and Eric Herring, 'Historical Materialism', in Alan Collins, op.cit., (ref. 3), p. 132 & 46; & Barry Buzan, O. Waever and J. de Wilde *Security: A New Framework for Analysis* (Boulder, Co: Lynne Rienner, 1998), p. 7

⁶ Ken Booth, *Theory of World security* (Cambridge: Cambridge University Press, 2004), p. 222; See also Ole Wæver, 'Securitization and Desecuritization', in Ronnie D. Lipschutz (ed.), *On Security* (New York: Columbia University Press, 1995), pp. 46-86. The essence of Speech Act Theory is that the utterance of words and their ultimate gaining of recognition by audience in a society gives meaning to something.

⁷ Ole Waever, et al. *Identity, Migration and the New Security Agenda in Europe* (London: Printer Publishers, 1993), p. 23; See also David Mutimer, 'Beyond Strategy', in Craig A. Synder, *Contemporary Security and Strategy*, (ref. 4), p. 51

⁸ Anything to which an existential threat is posed is known as a 'Referent object'. Actors responsible to provide security to referent objects are known as securitising actors. For details see Barry Buzan, *Security: A New Framework for Analysis*, (ref. 5), p. 36; Ralf Emmers, 'Securitisation' in Alan Collins' *Contemporary Security Studies*, (ref. 3), p. 132; & Amir Ullah Khan, "Gwot, FATA & Non-Traditional Security Threat: A Case Study of Polio in NWA", *Regional Studies*, Vol. XXXII, No. 3 (Summer 2014), p. 63

⁹ Ralf Emmers, 'Securitisation' in Alan Collins' *Contemporary Security Studies* (ref. 3), p. 136

¹⁰ If such threat is related with health then it will be named as health security. If the referent object is human being, then it will gain the identity as 'human health security'.

¹¹ T. Hopf, 'The Promise of Constructivism in International Relations Theory', *International Security*, Vol. 23, No. 1, 1998, p. 173; See also Christine Agius, 'Social Constructivism', in Alan Collins' *Contemporary Security Studies...*, p. 91; Cited in Dr. Zafar Nawaz Jaspal & Amir Ullah Khan, "Paradox of Health Security Governance in Pakistan and Its Regional Implications: From IHRs, 2005 Perspective", (Submitted to *IPRI Journal* for publication)

¹² World Health Organization (WHO). *The World Health Report 2007—A Safer Future: Global Public Health Security in the 21st Century*, 2007. <http://www.who.int/whr/2007/en/> (Accessed December 22, 2014). See also Suman M. Paranjape and David R. Franz, "Implementing the Global Health Security Agenda: Lessons from Global Health and Security Programs", *Health Security*, Vol. 13, No. 1, 2015

¹³ Amir & Jaspal, (ref. 11)

¹⁴ "Global Health and Foreign Policy", *United Nations General Assembly Resolution A/RES/68/98*, Dec 11, 2013.

¹⁵ *International Health Regulations* (2nd ed.), 2005 (Geneva: WHO Press, 2008), p. vii

¹⁶ *IHRs, 1969*, p. 6; & see also *World Health Assembly (WHA) Resolution, 33.4*

¹⁷ See for details Article 2 to 13 of *IHRs, 1969*, pp. 10-13

¹⁸ Part-V *IHRs, 1969* deals with special Provisions relating to each of the diseases subject to the Regulations. This Part is consisted of three Chapters; Chapter I—Plague (Articles 50 to 60), Chapter II—Cholera (Articles 61 to 64), and Chapter I—Yellow Fever (Articles 65 to 75)

¹⁹ Article 82 of Part VII of *IHRs, 1969*, p. 37 provides details about it.

²⁰ *International Health Regulations, 1969* (Geneva: World Health Organisation, 1983), p. 5; & see also World Health Organisation Official Records, No. 209, 1973, p. 22

²¹ *International Health Regulations, 1969*, (Geneva: World Health Organisation, 1983), pp. 16-17

²² Tom Inglesby and Julie E. Fischer, 'Moving Ahead on the Global Health Security Agenda', *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, Vol. 12, No. 2, 2014, pp. 64-65

²³ Amir & Jaspal, (ref. 11)

²⁴ See for details *WHA Resolution, 58.3*

²⁵ *International Health Regulations, 2005*, (Geneva: World Health Organisation, 2008), p. 1

²⁶ Ibid.

²⁷ Tom and Julie, 'Moving Ahead on the Global Health Security Agenda' (ref. 22), p. 63. It aimed to establish coordination among these global institutions to halt epidemics. It also aimed to detect biological threats early and respond quickly to such threats. It also deals with issues like antimicrobial resistance, food security, laboratory biosafety and biosecurity, outbreaks of diseases, timely effective diagnosis and reporting of disease, sharing of samples, emergency operation centres, rapid health response teams, and the ability to provide medicines and expertise during health emergencies. See for details Global Health Security Agenda. 'Toward a world safe & secure from infectious disease threats'. <<http://www.globalhealth>>

²⁸ Ibid., pp. 64-65

²⁹ Rebecca Katz and Julie Fischer, “The Revised International Health Regulations: A Framework for Global Pandemic Response,” *Global Health Governance*, Volume. III, NO. 2 (Spring 2010), p. 1 <http://www.ghgi.org> Accessed on March 1, 2016; See also Norman Howard-Jones, “The scientific background of the International Sanitary Conferences, 1851-1938,” *WHO Chronicle* 11 (November 1974): 495-508; & V. Hubert, “The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851–1894,” *The Historical Journal* Vol. 49, No. 2 (2006), pp. 453-476

³⁰ See for details David P. Fidler, “The Globalization of Public Health: The First 100 Years of International Health Diplomacy,” *Bulletin of the World Health Organization* Vol. 79, No. 9, 2001: 842-9; & Hugh S. Cumming, “The International Sanitary Conference,” *American Journal of Public Health* 16, No. 10 (October 2006), pp. 975-980

³¹ Rocco Casagrande, “Agricultural Bioterrorism (Agricultural Biosecurity, Agroterrorism),” in Richard F. Pilch and Raymond A. Zilinskas, *Encyclopedia of Bioterrorism Defense*, pp. 12-13. See also for details T. Schubert, S. Rizvi, X. Sun, T. Gottwlad, J. Graham, and W. Dixon, *Plant Dis.*, 200, pp. 340-356.

³² For details see *International Plant Protection Convention (IPPC), 1997*

³³ Article IX of IPPC

³⁴ Zafar A. Reshi and Anzar A. Khuroo, “Alien Plant Invasions in India: Current Status and Management Challenges”, *Proceedings of the National Academy of Sciences, India, Section B: Biological Sciences*, Vol. 82, No. S2, (November 2012), 305

³⁵ See for more details A. K Goyal and S. Arora, *India's Fourth National Report to the Convention on Biological Diversity*. Ministry of Environment and Forests, Government of India, New Delhi

³⁶ “Biosecurity Bill”, *Frontline*, April 5, 2013.

<http://www.frontline.in/the-nation/biosecurity-bill/article4521559.ece>. This Bill is integration of both plant and animal quarantine departments to prevent, control, eradicate and manage pests and diseases of both plants and animals so as to ensure agricultural biosecurity. However, there are reservations about the passage of this Bill that it is passed without consulting the states’ governments. See for details ‘Pawar Draws Flak for Tabling Agriculture Bill without Consultation’, *The New Indian Express*, 20th of January 2014 06:00 AM

<http://www.newindianexpress.com/nation/Pawar-Draws-Flak-for-Tabling-Agriculture-Bill-Without-Consultation/2014/01/20/article2008715.ece>

³⁷ This Act was published in ‘Government Gazette of Pakistan Extraordinary *vide* SRO 129 (K)/ 67, dated January 2, 1967; Cited in Amir Ullah Khan & Dr. Zafar Nawaz Jaspal, “Plant Biosecurity Governance Dilemma in Pakistan: The Case Study of Khyber Pakhtunkhwa”. (Research Paper submitted to *Journal of Political Studies*)

³⁸ World Health Organisation. <http://www.who.int/mediacentre/factsheets/fs387/en/> (Retrieved on August 23, 2016)

³⁹ Duane J. Gubler, “Resurgent Vector-Borne Diseases as a Global Health Problem”, *Emerging Infectious Diseases*, Vol. 4, No. 3, July–September 1998. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2640300/pdf/9716967.pdf>

⁴⁰ See for details “Safe drinking water important to control vector-borne diseases”, *Daily Times*, April 8, 2014). <http://www.dailytimes.com.pk/islamabad/08-Apr-2014/safe-drinking-water-important-to-control-vector-borne-diseases>

⁴¹ Daniel M. Gerstein, *Bioterror in The 21st century: Emerging Threats in a New Global Environment* (Annapolis: Naval Institute Press, 2009), pp. 34-35; See for details Warren Levinson & Ernest Jawetz, *Medical Microbiology & Immunology* (New York: Mc Graw Hill, 1998), pp. 270-271; & 'Dengue Disease: Causes and Prevention', *The New York Times*, (March 26, 2014). <http://www.nytimes.com/health/guides/disease/dengue-fever/overview.html>

⁴² Ibid., p. 43

⁴³ See for details "Safe drinking water important to control vector-borne diseases", *Daily Times* (8th of April, 2014). <<http://www.dailytimes.com.pk/islamabad/08-Apr-2014/safe-drinking-water-important-to-control-vector-borne-diseases>>

⁴⁴ See for details *International Health Regulations, 1969*, (Geneva: World Health Organisation, 1983).

⁴⁵ Details available on <http://www.acq.osd.mil/eie/afpmb/docs/dveps/Pakistan.pdf> (Retrieved on August 23, 2016)

⁴⁶ "Disease risk eases in parts of flood-hit areas: UNICEF," *Daily Times*, September 15, 2010; see also Dr. Zafar Nawaz Jaspal, "Biosecurity and Pakistan: A Critical Appraisal", *NDU Journal*, Vol. XXIX, 2015

⁴⁷ "Dengue Session," *Dawn*, August 29, 2012.

⁴⁸ Amir's interview with Prof. Dr. Imtiaz Khan, Department of Entomology, Khyber Pakhtunkhwa Agricultural University Peshawar (Dated March 28, 2014)

⁴⁹ Prof Mukhtiar Zaman Afridi's lecture (Head of pulmonology department of Khyber Teaching Hospital Peshawar) on 'Dengue Fever: Facts & Prevention', organised by the US Consulate General Peshawar in Peshawar Club (Dated 17th of November, 2011)

⁵⁰ Ibid.

⁵¹ Preventive measures urged to control vector-borne diseases. *Daily Times*, 6th of April, 2014

<<http://www.dailytimes.com.pk/national/06-Apr-2014/preventive-measures-urged-to-control-vector-borne-diseases>>

⁵² ELISA stands for *Enzyme-linked immunosorbent assay*. A type of primary binding test used to detect and measure either antigen or antibody. Either antigen or antibody is bound to a solid substrate (polystyrene surface), and a second antibody to which enzyme is conjugated is added, followed by a substrate for the enzyme.

⁵³ See for details *The Express Tribune*, 10 July, 2014. <<http://tribune.com.pk/story/738026/fever-pitch-two-more-patients-take-swats-dengue-count-to-25/>>

⁵⁴ Data shared by Dr. Muhammad Asif, Provincial Coordinator, Roll-Back Malaria Control Programme & Provincial Spokesperson for Dengue control, Peshawar, Khyber Pakhtunkhwa (Dated 24th of March, 2014)

⁵⁵ *Daily Mashriq* (Peshawar/Islamabad), 21st of October, 2013

⁵⁶ *Daily Mashriq* (Peshawar/Islamabad), 21 October, 2013, pp.3 & 10

⁵⁷ Khyber News, June 9, 2014, 10:10 pm

⁵⁸ *Daily Mashriq*, 19th of September, 2014

⁵⁹ *Daily Aaj*, 21st of September, 2014

⁶⁰ *Daily Aaj*, 11th of July, 2014

⁶¹ *Daily Express*, 30th of September, 2014

⁶² *Daily Mashriq*, 14th of October, 2014

⁶³ Dr. Muhammad Asif, (ref. 51)

⁶⁴ Ibid.

⁶⁵ **F.H. Mughal, 'Health: Zeroing in on the Zika Virus'**. *Dawn, Sunday Magazine*, February 14, 2016

<http://www.dawn.com/news/1239460> (Accessed on February 18, 2016)

⁶⁶ "Zika Virus Prevention". Center for Disease Control and Prevention.

<http://www.cdc.gov/zika/prevention/index.html> (Accessed on February 18, 2016)

⁶⁷ 'Pregnant and living in an area with Zika', Centre for Disease Control and Prevention, February 16, 2016. http://www.cdc.gov/zika/pdfs/preg_areaswithzika.pdf (Accessed on February 18, 2016)

⁶⁸ 'At least 20,000 infected by Zika virus in Colombia: Women account for 63.6 percent of the cases, of whom at least 2,000 are pregnant', *Al-Jazeera*, January 30, 2016

<http://www.aljazeera.com/news/2016/01/20000-infected-zika-virus-colombia-160130165855047.html>

⁶⁹ Microcephaly is an abnormality of children in which they are born with small heads and brains.

⁷⁰ Ref. 68

⁷¹ **'No Zika virus in Pakistan'**, *The Express Tribune*, February 13, 2016

<http://tribune.com.pk/story/1045832/public-health-no-zika-virus-in-pakistan/>

(Accessed on February 17, 2016)

⁷² *The Express (Peshawar)*, February 14, 2016

⁷³ Amir Ullah Khan, "Biosecurity Puzzles And Prospects: Case Study of District Peshawar and District Bannu". (Unpublished Draft of PhD Dissertation), pp. 224-229

⁷⁴ Dengue vaccine enters phase 3 trial in Brazil: Investigational vaccine to prevent 'breakbone fever' developed at NIH, Thursday, January 14, 2016. <http://www.nih.gov/news-events/news-releases/dengue-vaccine-enters-phase-3-trial-brazil>

⁷⁵ Ref. 45

⁷⁶ *Daily Express*, July 9, 2014

⁷⁷ Amir, (ref. 73)

⁷⁸ Amir's interview with an Official in Directorate of Health, Khyber-Pakhtunkhwa, dated 10/02/2014

⁷⁹ Amir, (ref.73)

⁸⁰ Mr. Saleem Sethi, Programme: Dengue Disaster, *Khyber News* (re-telecast), 11:20am dated 13/09/2013.

⁸¹ Mr. Saeed Ur Rehman (Representatives of Khyber News), Programme: Dengue Disaster, *Khyber News* (re-telecast), 11:20am dated 13/09/2013.

⁸² Mr. Khan Akbar (Representatives of Khyber News, who was himself infected by Dengue), Programme: Dengue Disaster, *Khyber News* (re-telecast), 11:20am dated 13/09/2013.

⁸³ Amir, (ref. 73)

⁸⁴ Mr. Saleem Ur Rehman (Member of National Assembly of Pakistan), Programme: Dengue Disaster, *Khyber News* (re-telecast), 11:20am dated 13/09/2013.

⁸⁵ Khan Akbar. *Khyber News*, *Khyber TV*, dated 23/08/2013 at 21:05

⁸⁶ Amir's interview with Dr. Syed Gulam Mujtaba is a Deputy Medical Superintendent (Store) in Khyber Medical Hospital Peshawar. (Dated Dec 16, 2013)

⁸⁷ Ibid.

⁸⁸ Marco Torres, 'Most Modern Diseases are Man-Made'. (Accessed on April 8, 2014) <http://www.bibliotecapleyades.net/ciencia/ciencia_industryweapons125.htm>

⁸⁹ Laurie Garrett, "The Return of Infectious Disease," *Foreign Affairs*, Vol. 75, No. 1 (January - February, 1996), p. 72; See also Dr. Zafar Nawaz Jaspal, (ref. 46)

⁹⁰ Details available on <http://www.acq.osd.mil/eie/afpmb/docs/dveps/Afghanistan.pdf> (Retrieved on August 23, 2016)

⁹¹ John P. Vickery, David R. Tribble, & Shannon D. Putnam (et al.), "Factors Associated with the Use of Protective Measures against Vector-Borne Diseases among Troops Deployed to Iraq and Afghanistan", *Military Medicine*, Vol. 173, No. 11, 2008, p. 1060

⁹² It is worth to mention that it is not a signatory to United Nations Conventions To The Status of Refugees, July 28, 1954 and its Protocol of 1967. See for details Ali Nawaz Chohan, "Signing The Refugee Convention", *The Express Tribune*, 5th of July, 2011 <<http://tribune.com.pk/story/202214/signing-the-refugee-convention/>>; & "UNHCR urges Pakistan to sign Geneva Refugee Convention", *Pakistan Today*, July 29, 2011 <<http://www.pakistantoday.com.pk/2011/07/29/national/unhcr-urges-pakistan-to-sign-geneva-refugee-convention/>>

⁹³ "Pakistan extends Afghan refugees stay until end of 2016", *Dunya News*, June 30, 2016

<http://dunyanews.tv/en/Pakistan/343309-Pakistan-extends-Afghan-refugees-stay-until-end-of>

⁹⁴ Maryam Usman & Riaz u IHaq, "Pakistan firm on sending Afghan refugees back", *The Express Tribune*, July 19, 2016

⁹⁵ *Daily Express (Urdu)*, August 2, 2015; See also Jaspal and Amir, (ref. 11)

⁹⁶ Amir, (ref. 73)

⁹⁷ Ref. 45

⁹⁸ Ibid.

⁹⁹ Prof Mukhtiar Zaman Afridi's lecture (Head of Pulmonology Department of Khyber Teaching Hospital Peshawar) on 'Dengue Fever: Facts & Prevention', organised by the US Consulate General Peshawar in Peshawar Club. (Dated November 17, 2011).

¹⁰⁰ "Pregnant and living in an area with Zika". Center for Disease Control and Prevention, February 16, 2016. http://www.cdc.gov/zika/pdfs/preg_areaswithzika.pdf; See also "Zika: What we know and what we don't know". Center for Disease Control and Prevention, February 17, 2016. <http://www.cdc.gov/zika/pdfs/zika-what-we-know-infographic.pdf> (Accessed on February 18, 2016)

¹⁰¹ Dr. Amanullah Mohmand, *God's Verses & Modern Medical Sciences* (Peshawar: Alwaraq Printing Press, 1997), p. 127-129

¹⁰² Ausaaf Ali, *Haqooqul Ibaad* (Islamabad: National Book Foundation, 2014), p. 69

¹⁰³ 'Kitabut Taharat' in *Sahih Muslim* Trans: by Alama Waheeduz Zaman (Lahore: Khalid Ihsan Publisher, 2004), p. 355

¹⁰⁴ Ibid., p. 353