

Impacts of Climate Change on the Health of Older People in District Nowshera- Pakistan

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Abstract

The study was carried out in district Nowshera in 2017, in order to examine the effects of climate change on the health of older people. The Universe of the study was District Nowshera which consist of three tehsil namely Phabbi, Nowshera and Jehangira while in the first stage purposively two tehsil Phabbi and Nowshera were selected on the basis of more climate affection. On the same methodology in the second stage villages Kheshgi Bala and Cant union councils were selected from Nowshera while Mohib Banda, Pashtung Ghari and Jabba Khansa were chosen from tehsil Phabbi. The number of total respondents were 117 in the total villages while number of male was 54 and women was 63. The data was collected through focused group discussion, Key Informant interview and consultation meeting with Elder people of the study area. The results indicate that climate change has severely affected the health of the older people which cause multiple disease such as Heart, Skin irritation, Malaria infection, respiratory infection, diarrhea, psychological disorder, dengue and dehydration which was not severe as compared to 20 years ago in the study area. The climate has changed the temperature, which has affected the rain pattern annually in the study area and disturbs the ecosystem for all living organism in district Nowshera. Mosquito, heat stress, flood and degradation of the land, deforestation and population pressure problems were observed in the study area. On the basis of problems the following recommendations were suggested for future control measurement. More plantation strategy should be applied for soil erosion because through soil erosion the more mud come into the river which fulfill river from mud which increase the chances of flood in the rainy season which push community destruction in the study area. Cleanness of the river is required and community should be also informed through awareness program to not put plastic bags in the river which block the river water and cause the flood. Drainage system should be developed in the study area. Health services should be provided for control of diseases measurement. Transportation system should be developed for the facilitation of marketing which play key role in pushing the economy of the study area. Similarly older people women and men should be facilitated in a proper way in District Nowshera.

Keywords: - Climate, Impact, Older People, Health, District Nowshera

DOI: 10.7176/JAAS/57-01

Publication date: August 31st 2019

1. Introduction

The long-term living conditions of populations depend on the continued stability and functioning of ecological and physical systems, often referred to as life-support systems. The world's climate system is an integral part of this complex of life-supporting processes, one of many large natural systems that are now coming under pressure from the increasing weight of human numbers and economic activities (World Health Organization, 2003). Rapid changes in global and regional climate can cause adverse implications for human well-being, development, and security through increased exposure to severe weather conditions such as floods and droughts that will directly magnify the risks of diseases and poor-health, inadequate drinking water and food scarcity, loss of livelihoods, migration, violence, and conflict (United Nations Development Programme, 2007). Vulnerable and marginalized groups including the poorest populations in low and middle income countries will face a disproportionate impact of climate change and this will threaten the effectiveness and success of development and poverty reduction efforts. Conversely, existing inequalities can also exacerbate individuals' vulnerability to the negative effects of climate change (Bernstein et al., 2008).

According to the Climate Risk Index (CRI) of Global Climate Risk Index 2017, Pakistan remains among the 10 most vulnerable countries during 1995-2015 (Kreft et al., 2016). The country being the sixth most populous country of the world, is already resources stressed and depends largely on agriculture for its economy. The devastating floods and droughts continue to heavily toll on the country's economy and human lives. The agricultural lands have been degraded and financial losses have been estimated at \$2 billion. Research studies reflect more changes in weather pattern that may lead to prolonged droughts, rain torrents and intense heat waves in the country. In the foregoing scenarios, different age and gender groups within the country will suffer at different scales based on their degree of vulnerability and resilience. Older People, constitute a significant portion of the country population, are physically, financially and emotionally less able to deal with the effects of a changing climate compared with the rest of the population which increase their insecurity and exposure to certain threats caused by a changing climate.

In this situation, where the impacts of the changing climate have already been manifested on almost all the disciplines of life, the best option is to timely adapt to the changes that have already happened and or expected to occur. For adapting to changing climate, it is very important to have a pragmatic knowledge of the nature of change and its impacts on a specific group of population. Help Age International Organization records that 67% of the old age (people aged 60 or above) are living in low- and middle-income countries which are more prone to climate induced hazards. Though climate change affects every one, a considerable volume of evidences confirms that it causes specific risks to older persons, both men and women. Older people are more susceptible to the adverse impacts of extreme weather events and changing climatic pattern. They have an increased risk of disease, restricted mobility and food insecurity. The sufferings of some older people are further exacerbated due to social and economic factors. Social helplessness and little access to resources, in addition to fragile health conditions, hinder their capacity to cope with climate-related stresses. Though, they can play an important role in adaptation of their families and respective communities to climate change impacts. Their experience can provide vital information on past climatic histories, hazards and disaster impacts, a community's vulnerabilities and capacities, or socio-environmental relationships, and can be a key to understanding the nature of climatic vulnerability. It is therefore vital that climate mitigation and adaptation strategies are inclusive of older people in order to maximize these capacities in addition to addressing their rights and vulnerabilities (Clodagh & Clare, 2015).

A research article on 'Aging, Climate Change and Legacy Thinking' reflects that older men and women have to care about climate change for many reasons regarding their age. First, they are especially vulnerable to several of the health impacts of climate change, such as heat waves, diminished air quality, and the disruptions of extreme weather events. Second, as they get older, they may take on political or social views that condition their attitudes toward climate change. Third, older people may feel a sense of legacy—a concern for the well-being of those who will come after them (Frumkin, Fried et al., 2012). A research study conducted on older people in nine countries in Africa, Asia and Latin America exposed that older women and men are affected by the changing climate (helpage reference). According to the respondents, they suffered damages to their property, land, livestock, crops and other means of livelihood. The older men and women were aware about changes in the environment and were desirous to be included in climate change related debates and policy talks.

District Nowshera is one of the most at risk in Pakistan due to its geographical location and rapidly changing climate, as per the National Disaster Management Plan 2012-22, The relative severity index of the NDMP puts it as the most "At risk District" in Khyber Pakhtunkhwa, with a total risk weightage of 24. The district is prone to both natural and human induced hazards. This diverse profile includes hazards like riverine floods, flash Floods, Earthquakes, Land sliding, Soil Erosion, Epidemics, Drought, Pest Attacks, water born disease, hail storms as well as industrial fires, sectarian violence, terrorism, IDPs and refugees. (District Disaster Management Unit, 2014). This climate induced hazard has severely affected the health of residents of the district especially older people. Therefore this study aim to identify the effects of climate change on the health of older people both men and woman.

2. Methods and Material

Universe of the Study

The study was conducted in District Nowshera of Khyber Pakhtunkhwa. District Nowshera is situated in the east of the province adjacent to Peshawar. It borders in the North with District Mardan, in the North East with District Swabi, in the South with District Kohat, in the South West with Orakzai Agency and District Attock of Punjab in the East. The district consist of 3 tehsils and 47 Union Councils covering an area of 1748 sq.km (675 sq. m) between latitude 30.42, to 34.09 N, longitude 71.41 to 72.15E. Nowshera was a Tehsil of District Peshawar till 1988 when it was notified as a District. The area of district Nowshera is 1748 Km and projected population is 1462761 with annual growth rate of 2.9% (Calculated on the basis of 1998 population). The male and female ratio is 52:48 and the urban and rural ratio is 25:75 while average household size is 7.7 person and electricity facilitation is 91%. District Nowshera consist of three tehsil namely Nowshera, Pabbi and Jehangira. The total union council of Nowshera is 47 while village councils number is 129 and municipal committees number is 4 and town committees number is only one. Provincial seats number is 5 while national seat number is 2. In this district 8 hospitals, 16 dispensaries, 7 rural health centre s, 32 Basic Health units, 4 mother child care centers and one TB Clinic are working for the facilitation of health services.

Seventeen percent population of the study area is involved in labor and about 21 % is involved in agriculture while the remaining population depends on private, government services and business of different scales. Climate of the district is warm and sub humid. The average rainfall at Risalpur and Cherat during 1981 to 2013 has been recorded as 684 and 585 mm respectively. The area receives maximum rainfall i.e. about 60% in the month of February, March, April, July and August. In summer the temperature goes up to 40°C and more, while in winter the weather temperature dropped to 1°C. Geographically the district has a great diversity in its terrain. The northern part of the district is mostly plains with more rivers and canals, while the southern parts, Ziarat Kaka Sahib, Nizampur, Cherat etc. have mild slopes and hills mostly rainfed and scarcity of water . Hence,

some areas have issues of water logging while other areas are facing scarcity of water particularly for drinking. Indigenous knowledge is an inevitable element of devising a coping or development strategy. For a pragmatic analysis of climate change impacts on older men and women, it is necessary to listen to their voices and also to explore their experiences, perceptions and already adopted or recommended coping strategies. The current study was a rapid appraisal to lay the foundation for further in-depth research and required action. Along with review of existent data/literature, the study comprised three major components of Focus Group Discussion (FGD), Key Informants' Interview (KII) and consultation with the stakeholders.

Focus Group Discussion (FGD)

To conceive a gender sensitive scenario, separate FGDs were conducted with both male and female OPAs in five (5) UCs, wherein female and male OPAs existed. However, in selection of UCs other factors i.e. geo-physical, agro-climatic and socio-economic conditions were also adhered to, for an ample coverage of the district. Total 54 men and 63 women with age range of participated in the 5 men and 5 women FGDs at 5 Union Councils. The study team, led by a team leader, comprised one male and one female. A questionnaire/checklist, developed in consultation and tested prior to the FGDs, was used for data collection.

Key Informants' Interview (KII)

Seven (7) community elders, activists and professional having traditional and/or modern knowledge and sufficient exposure were separately interviewed, in almost all the selected union councils, to have more insight in the issues some of which were not possible to get information about in a general meeting or discussions and to cross check the information collected in the FGDs. Different questionnaire was used for Key informants interview.

Consultation Meeting with Stakeholders

Many other government and non-government actors are concerned with old age affairs in the districts and have authentic information regarding challenges of older persons in face of the rapidly changing climate and its subsequent impacts on natural and human systems. A consultation meeting was held with representatives of District Administration, District Disaster Risk Management, Social Welfare and all other relevant government line departments and non-government development and humanitarian agencies to share with them the information collected through FGDs and KIIs for further validation and to know more about the theme and formulate workable recommendations with consensus. All the corrections and suggestions of the participants were incorporated in the present study.

3. Results and Discussion

The data collected through survey about the climate and health of older people shows that climate has greatly affected the weather pattern of the district which in turn effected the health of older people. Different diseases were noted among the people which are described in Table 1. The obtained data was compared with the data of 20 years before.

i. Health Issues Caused by Changes in Climate

The data obtained observe that an increase has been experienced in skin diseases, typhoid, malaria, dengue, dysentery and diarrhea due to high temperature, contaminated water and mosquitoes. Incidents of heat strokes/stress and dehydration are also increasing with passage of time while some cases of sun burn have been reported in the recent years. Rise in temperature and saline water are perceived as the two environmental causes of heart diseases in the area. Increase in dust due to dry winters and use of cold water in hot summers aggravate respiratory infections while contaminated water has posed a high risk of hepatitis in the area particularly for older men and women who have comparatively less access to safe drinking water. Older women are more prone to all these and many other environment and nutrition related diseases due to their restricted mobility and access to health facilities (Table -1)

ii. Effects of Extreme Climate Events on Health

According to the perceptions of older people of the area, increasing extreme climate events include heat waves, hail storms, rain storm, riverine / flash flood, winter drought which are intensifying from the last 15 years. Due to heat stress sometimes people, mostly older men working in the fields, get faint and die, while dehydration is common in intense summers. Some sun burn cases have also been observed in the last 15 years.

iii. Weaknesses in Older Men and Women Due to Malnutrition/ Food Poisoning

Losses in agriculture production due to floods, drought, hail storms and increasing population of pests are causing food shortage in the area. Lack of purchase power and price hike restrain poor households from fresh food. Little access of older persons to balanced and nutritious diet causes weaknesses and diseases. Comparatively, women are suffering more from malnutrition e.g. joint pains and body aching are common in women probably due to deficiency of vitamin and minerals. Besides, poor older persons could not afford fresh food while they have little facilities to properly preserve food for the next meal and so often suffer from food poisoning. Furthermore, extensive use of fertilizers and

agrochemicals by farmers degrade quality of agriculture production that in turn creates health issues i.e. stomach disorders, hepatitis and nutritional deficiency.

iv. Changes in Quality and Quantity of Drinking Water

Bore wells, Tube wells and hand pumps mostly installed by (PHED), Municipality and NGOs are the main sources of drinking water, whereas irrigation is mostly done with canals and tube wells. In some areas water table is very shallow i.e. 20-40 ft below the surface while in other areas it goes down from 90 to 150ft. In water log areas, where the water table is high, quality of water has degraded due to gutter system and improper sewage. It is getting yellowish with foul taste. Various water borne diseases were found in older persons particularly in the poor ones. Jaundice, hepatitis, typhoid, and gastroenteritis are common in the area. In water log areas different kind of vectors i.e. mosquitoes are causing malaria, diarrhea, skin rashes and sometimes dengue in all age and gender groups as reported earlier (Hunter, 2003). Improper disposal of solid waste and sewage system further contribute in increase of the population of such vectors. Older persons, both men and women are the prominent victims of these diseases due to their fragile immunity and lack of protection facilities.

v. Changes in Population and Species of Harmful Insects/Animal

The data observed that population of mosquitoes, cockroaches, bed bugs and flies have increased many times as compared to the times 20 years back. In past the house flies were present only in summer but now they can be observed in the whole year and some new species of mosquito such as Dengue was introduced which were unknown even 10 years ago. Some new species of weed developed which were alien to the area before flood 2010 which are causing skin rashes/allergies in the area. The number of some big animals such as wild boar has also increased, after flood 2010, which damages crops of maize and sugarcane. Population of different harmful mosquitoes particularly house flies, bed bugs and mosquitoes increased as compared to 20 years ago which increased sleeplessness and physical discomfort of older men and women that further creates mental stress and various kind of diseases. People use pesticides, mosquito coils and other chemicals which sometimes cause respiratory illness and allergies in older persons particularly in those suffering from asthma. Use of such chemical and fumigation also causes cough and chest infection in children and older persons. Sometime mosquito repellent and other such lotions, when having contact with eyes, produce eyes irritation.

vi. Psychological Issues

It was observed that "People, after flood 2010, got panic and now there is always a fear of flood whenever there are heavy and prolonged rains in summers". Due to property loss some people got depressed, and very few cases of psychological disorder were recorded. However, older people, especially of poor households, suffer from agony due to physical discomfort e.g. sleeplessness, heat stress, dehydration while having less facilities. This was observed that climate change can create cal

vii. Access of Older Men and Women to Health Facilities

Private clinics and Medical technicians are the most available services at almost all villages. There are BHUs at different locations although people mostly go to the district headquarter hospital at Nowhera City for medical examination/treatment. Older men and women have little access to health facilities within the district and outside it due to little financial resources, dependency on others and no specific facilities available at health institutions at all level.

4. Conclusions and Recommendations

The study concluded that climate change has made the environment unfavorable and disturb the health of the older people in the study area. Different disease i.e. Heart diseases, Skin irritation, Malaria infection, respiratory infection, diarrhea, psychological disorder, dengue and dehydration were found more severe as compared to 20 years ago. The increasing weather temperature due to climate change affected the annual rainfall pattern and disturb the whole ecosystem of the area for all living organisms. Mosquito, heat stress, flood and degradation of the land, deforestation and population pressure problems were observed in the study area due to increasing weather temperature. These factors disturb the climate which further affected the health of older people of the study area. Therefore it is suggested that the government regulate the health departments of the district and provide special packages to older people for health and safety. Awareness about changing climate and its impacts needs to be raised in all segments of the communities. There is a need of gender and age specific physical and skill enhancement interventions for climate change risk management. Older persons/PWDs sensitive Disaster risk management plans may be incorporated in ADPs of local and provincial government. Ensure sustainable supply of clean drinking water and safe eradication of harmful pests/insects and reptiles. Older men and women may be facilitated with Instruments / equipment i.e. wheel chair, torch, umbrella and stick. Older men and women, having no pension, need to be provided with Monthly subsistence. The water quality should be regularly monitored to control increasing incidents of Hepatitis, typhoid and diarrhea. 20-30 houses in each UC could provide shelter in emergency to the poor and homeless older persons particularly those having no

children or caretakers. Social/religious institutions may be strengthened in a way to contribute to knowledge sharing and raising awareness about climate change and sustainable use of natural resources. Community centers for senior citizen may be established at village level where they can spend quality time through productive as well as recreational activities

5. Acknowledgement

The authors acknowledged the financial support provided by the Helpage international Organization for the study. The support of Agriculture University Peshawar is greatly appreciated for providing staff for conducting this study

6. Contribution of the Authors

Mr. Irshad Ali Mian Deputy Director and Mohammad Zulfiqar Director of Climate Change Center of Agriculture University managed the whole project while Dr. Naushad Khan give structure to the paper and process all step of paper to the Journal while Dr. Fazal Hanan help in writing while Mr. Abbas Qazi and Dr. Nayab Gul also assisted in writing and paper structuring while the remaining authors help in data collection and tabulation throughout the Paper processing while Shah Fahad play great role in paper setting during typing and correction.

Table 1 Changes in Diseases by Changes in Climate of the Sampled Respondents in the Study Area

Disease	Increasing or Decreasing (As compared to 20 years ago)	Season	Prominent Climate Related Causes
Normal cold/cough/fever	↑	Fall & winter	long dry intervals
Respiratory infections	↑	Summer & winter	Use of cold water/drinks in hot weather
Dysentery	↑	Summer	High temperature and contaminated water
Diarrhea	↑	Summer	High temperature and contaminated water
Skin diseases	↑	Summer	Increase in pathogens due to changing climate/ Increased summer temperature
Hepatitis	↑	All seasons	Contaminated drinking water
Hypertension	↑	Summer	Heat stress
Asthma	↑	All seasons	Air pollution and dust due to dry season
Psychological disorders	↑	All seasons / during and after disasters	Losses of livelihoods resources and human due to floods.
Typhoid	↑	During floods / summer	Scarcity of potable water in some areas
Malaria	↑	Monsoon	Increase in population of mosquitoes due to increased temperature, water logs in low basin and improper disposal of solid waste
Gue	↑	Summer	Conducive environment for breeding of dengue that didn't exist in past
Heatstroke	↑	Summer	Intense summer/ Increased temperature
Cardio vascular disorder	↑	All season	Saline drinking water and heat stress

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