

Impact of climate change on waterborne diseases on local community: a case study of phalia district mandi baha-ud-din (Pakistan)

Maryam Alamgir

Department of Sociology

PMAS Arid Agriculture University, Rawalpindi, Punjab, Pakistan

Email: maryam_rana215@yahoo.com

Abstract

Climate change is becoming a clear threat to the development of Phalia City because it not only has an adverse impact on the environment and the economy, but also has a negative impact on the social aspects, including public health. In climate health outcomes, infectious diseases, namely malaria, dengue fever, water and food borne diseases, and rodent diseases are becoming a key disease. In view of this, the study aimed to study the views of experts and the public on the health effects of infectious diseases caused by climate change. This study was conducted in Phalia City by using of quantitative and qualitative method used in this research. In quantitative method the apply of random sampling technique, sample of 120 respondents both male and female. The data was collected from Tehsil Head Qutar Hospital Phalia, Mohallah

Hadiri and Mohallah Kemah and in qualitative method in-depth interview of 8 respondent from tehsil head qutar hospital. The obtained data was analyzed through SPSS (Statistical Package For Social Science) in quantitative analysis and in qualitative analyzed through thematic analyzed.

Key words: Climate change, Water born diseases, Health, Infarction diseases.

I. INTRODUCTION

Water is a basic component of life. Its consumption in one form or another has always been essential to human life. One type of water consumption is its in-stream use. This type of water consumption involves the use of water for swimming, boating or for such uses as in the production of electricity in the power plants. The other

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@gmail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

type of water consumption refers to the withdrawal of water for its use in drinking, household usage (such as in cooking, washing, bathing), irrigation etc. Even though water may vary with respect to its quality but a control is generally exerted over water that has to be consumed after being withdrawn (Safe Drinking Water Foundation, 2013).

The term “waterborne diseases” refers to the infections that are transmitted by contact with water (Hunter, 1997). It may happen either by the usage of water such as in washing, cooking or by its consumption such as in the form of drinking. Humans, especially children, are particularly susceptible to water borne diseases . The most commonly found waterborne infections include hepatitis A, E, cholera, diarrhea, Anemia, dehydration, malaria, flourisis, dysenteries, typhoid and other parasitic diseases giardiasis, cryptosporidiosis (World Health Organization, 2010a).

The safe water to access sanitation has been announced a human right by the United Nations and it must apply in both the times of peace and in emergencies. Lack of access to safe and clean water is a form of deprivation that threatens human life. Where availability of safe water and standard of sanitation are poor, the risk of acquiring water borne infections like hepatitis A, E, cholera, diarrhea, dysenteries, typhoid and other parasitic diseases, can be as high as

90percent (Gupta *et al.*,2000).

Reports on the situation in Pakistan with respect to water availability (not least the availability of drinking water) are not welcoming. In Pakistan, the combined impact of population growth, water-flows system losses and falling storage capacity have reduced per capita water availability water availability and consumption over time. The situation in Pakistan according the Strategic Country Environmental Assessment Report 2006 quoted from (World Wildlife Foundation,2007a).

The unsafe drinking water is a cause of many diseases including diarrhea, typhoid, intestinal worms and hepatitis and an estimated 250,000 child deaths occur each year in Pakistan due to water borne diseases (World Wildlife Foundation, 2007).

Child mortality for those under the age of five years in Pakistan equals about two-thirds of the total annual deaths, and the disease that counts as one of the major contributors to these deaths is none other than diarrhea. It was associated, for example, with 27 percent of under-five deaths. Surprisingly, for those children who were below the age of 1-11 months this association increased to a dramatic 40 percent .Over 60 percent of the population of Punjab gets its drinking water from hand or motor pumps (Pak-SCEA 2006) but the figure alters to slightly over 70 percent for

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

the rural areas (United Nations International Children's Emergency Fund,1998).

II. SIGNIFICANCE OF THE STUDY

Water, being the basic necessity that it is, is very important for human health. Pakistan is like many of the poor countries of the world facing critical problems of clean water for drinking and other consumption purposes. Nearly every governmental, private, local, national and international report forebodes that in coming days this problem is set to become worse. Water borne diseases are one of biggest health issues. They are not just a local or a national problem but truly a global one.

In this regard, the main purpose of the study was to highlight the difficulties of accessing clean potable water, which the people of Phalia city face. They are being deprived of their basic rights of access to clean water. While disclosing the causes of waterborne diseases this study also sheds light on the environmental issues and the negative socio-economic impact on people's life.

The level of awareness is so low that in many a cases even governmental and private dispensaries discharge both their waste, both of medicinal stock and equipment and sewage out in the open, which comes to affect people's lives in many ways. This study aims to make the

governments realize or pay attention toward the patterns of water consumption and the extremely poor quality of the available water in rural areas of Pakistan keeping in view the fact that this poor quality of water and the diseases that it is causing are gradually destroy the people's future.

III. OBJECTIVES

(1)To examine the diseases in local community caused by the unclean water and government performance to controlling the problem. (2)To studying the awareness level of local community about water born diseases.(3)To analyze the financial problems caused by the health issues

IV. REVIEW OF THE LITERATURE

The appraisal of relevant literature builds up the support of investigation on body of research. A considerable amount of literature is available in this respect, which helps us to scrutinize the different aspects of climate change and water born disases.In this chapter all the findings and analyzed and discussed in three part, Climate change and human health, Climate change and infection diseases and Theoretical Framework.

2.1 CLIMATE CHANGE AND HUMAN HEALTH

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@gmail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

It is expected that changes in climate variability and will not only have a negative impact on the environment, but will also have an adverse impact on the social and economic aspects of the city. Climate change has affect a wide range of industries and sectors such as agriculture, forestry, energy, tourism, water supply and public health (Tran, 2009).

The influenced of human health less of immediate components. These impacts will incorporate changes manner by which numerous irresistible infections are transmitted particularly water borne sicknesses, nourishment borne maladies and vector-borne ailments. The more, temperature related changes in the existence cycle of vector species and pathogenic microorganisms will build the potential spread of numerous vector-borne sicknesses, for example, jungle fever and dengue in spite of the fact that schistosomiasis may endure a net reduction. The larger fundamental territories of wellbeing sway are: warm related illnesses and mortality, wellbeing impacts related with surges, dry spells and tempest floods, irresistible maladies, hypersensitive and respiratory ailments; and emotional well-being (Patz *et al.*, 1996).

2.1.1 Heat Waves

Warm disease due to deaths are the result of larger experience to environmental

heat, leading to heat stroke, paralysis, heart attacks and strokes The majority deaths caused by warm or heat waves are concentrated in elderly and physically stressed populations as well as people with cardiovascular and respiratory diseases, In other case of global warming, the frequency and intensity of heat waves are expected to increase, and the dry season will also warm, so mortality will rise in hot weather (Haines *et al.*, 2006).

In addition, due to the urban heat island effect, cities are often particularly affected, which may result in temperatures higher than the surrounding suburbs and rural areas. During the heat wave, air pollution concentrations may also rise and may lead to increased mortality (McMichael, 2003).

2.1.2 Floods, Droughts and Storms

Natural disasters have different health effects, including physical harm, direct effects of morbidity and mortality, and potential long-lasting effects on mental health (in the context of tidal floods).Majority of death due can be attributed to sharply rising floods caused by increased drowning . Diarrhea and respiratory diseases may increase after the flood (Ahern *et al.*, 2005).

In addition, the impact on the local economy may still be severe, and the

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

increase in common mental disorders such as anxiety and depression due to the destruction of the family environment and economic losses (Haines *et al.*,2006). As a result, the risk of flooding in populations in low risk areas increases and the existence of public health infrastructure is limited (Few, 2004).

2.1.3 Infectious Diseases

The most punctual impacts of environmental change on wellbeing might be to change the dispersion and rate of irresistible sicknesses. Changing in work force and load streams, host and pathogens, arrive utilize and other ecological elements may influence infection designs (Hales *et al.*,2003).

For instance, the spread of numerous irresistible operators, pathogens and vector borne factors is touchy to climate changes, including temperature, moistness, precipitation, soil dampness. Likewise, environmental change may influence the existence cycle and life history of arthropod's. Along these lines, the circulation of vectors and pathogens and the capacity of arthropods to transmit pathogens can be adjusted, bringing about changes in the manner in which pathogens interface with arthropod vectors and human or creature has (Martens *et al.*, 1997).

Along these lines, even a slight

increment in infection appropriation may prompt more genuine clinical malady, while new populaces need procured insusceptibility. When all is said in done, irresistible illnesses can be characterized by the normal host of the pathogen (human or zoonotic) or as indicated by the method of transmission of the pathogen (specifically or in a roundabout way) (Patz *et al.*, 2003).

2.1.4 Respiratory and Allergic Diseases

Climate change is expected to affect air quality in a number of ways, including allergen production and allergies as well as ozone, increased concentrations of fine particles and dust. Some of these contaminants can directly cause respiratory illness or exacerbate existing conditions in susceptible populations, such as children or the elderly.

The certain aspects of air quality as known to affect health are highly cause by weather and climatic conditions. The summarily of the sun, the ozone formed in the polluted air has a good human health effect. Ozone can cause direct but reversible lung damage and may cause to persistent lung damage; increase premature mortality and exacerbate respiratory diseases (Centers for Disease Control and Prevention, 2009a).

V. METHDOLOGY

Phalia is located at 32.43 latitude and

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

73.58E.Its is located between two main cities of Mandi-bahu- Din and Gujrat, 23 km from Mandi-Bahu-Din, about near 50 km from Gujrat and about 45 from Malkwal. The facilities of health care are available on average in the city. The establishment of main government hospital in the city is THH (Tehsil Headquarters Hospitals). There are other hospitals and health care centers and clinic in different location in the Phalia city. The universe of study from where researcher was collected data, was city of Phalia, where 40 respondent were taken from head qutar hospital,40 respondent from Mohallah-Hadiri and 40 from Mohallah- Keemaha for quantitative data while for the qualitative data 8 in-depth interview were collected from Tehsil head quarter. After collecting data, it was converted into inferential form using SPSS for data analysis. Eventually, the Chi-square test was applied for testing the hypothesis and in qualitative through thematic analysis.

V. RESULT AND DISCUSSION

Table: 4.1 Distributions of Respondents the Effect of Rainwater on Ground Water

Variable	Frequency	Percentage
To Some extent	48	40.0
To great extent	56	46.7
Not at all	16	13.3

Total	120	100.0
-------	-----	-------

Table 4.1 above shows the effect of rainwater on groundwater. The results shows that the vast majority of the 56 respondents found the rainwater affected groundwater, and nearly 48 respondents believed that rainwater had a significant impact. A few respondents said they didn't know. If these respondents have some measure, things will become clearer. But it's hard to say anything clearly at the moment, not because the rain does have some impact.

Table: 4.2 Distribution of Respondents Regarding To Diarrhea Becoming a Cause of Children Death

Variable	Frequency	Percentage
To Some extent	38	31.7
To great extent	69	57.5
Not at all	13	10.8
Total	120	100.0

Table 4.13 shows that high mortality should be attributed to diarrhea. Based on the data it provides, the table shows that the vast majority of 69 respondents believe that diarrhea is largely responsible for child deaths. There was an option for “nothing at all” in the questionnaire, only 13 frequencies

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

were shown in the response. However, it is worth noting that this high mortality rate may indicate that respondents do not necessarily refer to deaths within their own families.

Table 4.3 Distribution of Respondents Regarding by the affect of Climate Change on Human Health Due To Allergies Diseases.

Variable	Frequency	Percentage
Never	27	22.5
Often	35	29.2
Rarely	30	25.0
Sometimes	28	23.3
Total	120	100.0

The table 4.3 the vast majority of respondent 35 and 28 between often and sometimes said they often victim of allergies diseases. These diseases cause of fever, food allergies, allergic asthma and allergic reactions. The symptoms of may cause of red eyes, rashes, sneezing, and runny nose, shortness of breath or swelling. Common allergens include pollen and certain foods.

4.3 THEMATIC ANALYSIS

This section of the chapter provides a discussion on the results of the research based on the primary data collected. It highlighted the socio-economic characteristics of the respondent and also focuses to investigate factors. In this research the researcher qualitative data

through in depth interview from eight respondents. The qualitative data analyzed under following in different themes.

4.3.1 Sources of water and pasteurize

Reasons for using a particular water source should be considered. Traditionally, several types of water sources, such as wells, ponds, rivers or springs, have been used for different purposes and they may not be operational throughout the year. Some water sources are more reliable, more convenient, or provide better water. If the user thinks "improvement" is "worse" in any respect, they may return to the traditional source of pollution. For example, chlorinated water may be introduced to odor or taste, it may be necessary to explain to the user the need for chlorination.(World Health Organization).

Majority of my respondent they face to difficult access to obtaining the pure water. They mostly store in water tank and bottles. They use motor pumps and hand pump for domestic use and drinking. Mostly respondents do not filter and boil before the drinking water.

According to my first respondent (Mr.Zaryan Khan,25 year from Mohallah Hadiri),he told me about the resources water. He uses water for drinks come from supply line and stores water in water tank. He often use before the drink water through filtration.

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

The second respondent ,(Miss Samina Waqas,32 year from Mohallah Keemah Phalia), she told me that they obtain water from tube well and she stores water in nestle bottles. she does not filter and boil water before drink because she satisfy tube well water and think there are no need to filter this water.

4.3.2 Causes and Prevention of Water Born Disease

According to my respondent (Mr Hassan,36 year),he belong to mohallah keemah, He told his family avoid from the getting diarrhea diseases. The mostly boil water uses in rainy days to prevent from diarrhea and cholera. If his family goes to hospital for the treatment of water borne diseases, he spent money minimum amount fifteen hundred or two thousand. He sometime goes for treatment in private hospital for better health facility.

Another respondent(Mr Nadir Khan,32 year from Phalia), he and his family take different ways adopt to avoid the getting diarrhea and cholera. They use boil and filtration water before drinking. He almost maximum amount one thousand spent on any diseases. He cannot afford money for private hospital and he prefer to government hospital for treatment of diseases.

4.3.3 Water Contamination, Human Health and Social Disturbances

According to (Miss Saba Hassan,30 year from mohallah hadiri) there are many reason of contamination in our community. She told me the main problem is sewerage system . During the rainy days the dirty water stay in the street and on the road. She said, should be improve the sewage system. She faces social problem due to contaminated water due to health and financial problem.

Majority of my respondent answered the reason of contaminated water is sewerage system and in the rainy days the water stay in street and mix in the water pipe line .

4.3.4 Human Behavior and Clean Water Services

.Majority of my respondent they have face to difficulty in access of pure water because the filter plant of water is more distance away from their house. They told if the council provide the clean water and they cannot much money afford for this services because they have finical issue and larger family system. Some respondent willing to pay this severice for clean water and some not willing to pay this services.

According to Mr Ali Raza,26 year from mohallah kemaah), he told me they have to face difficulty in accesses of pure water, because the filter plant of water is more distance away from his house. He told me if the council piped water supplied to your

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

house he willing to pay this service, and he will afford able for this services.

4.3.5 Climate Change, Social Status and Human Health

Majority of respondent told, due to climate change they have face many infection diseases, they victims of flue, allergic asthma and typhoid fever. The symptoms of may cause of red eyes, rashes, sneezing, and runny nose, shortness of breath or swelling. Common allergens include pollen and certain foods.

According to (Mis Shazia 37 year) ,She told me that the climate change affecting on human health, She agree that changes in climate changes in the pattern of transmission of infection diseases. Due to climate change she faces skin problem and respiratory diseases. She told me that the social status has affect on human health. The rich people better and expansive health facility and poor people cannot afford expensive health treatment for any diseases and therefore they prefer to government hospital for the treatment.

VI. CONCLUSION AND SUGGESTION

It shows the occurrence of waterborne diseases worldwide, but they have a special impact on children in developing countries, providing a clear link between water quality and health-related issues. Then there is the situation in Pakistan, which illustrates the

economic losses facing the country due to waterborne diseases. In addition to defining four goals, it also provides the importance of research. Establish methods for hypothetical statements and arguments, discussing water pollution, water-borne diseases and climate change in developing countries, the main causes of water pollution worldwide, and diseases caused by the interaction of water-borne diseases and socio-economics. The problem is, finally, the poor quality of drinking water in Pakistan. And the suggestion is following, Individuals require more instruction and attention to perceive that environmental change is a general medical problem. An abnormal state of comprehension of the connection between worldwide natural change and human wellbeing may expand the achievement rate of national environmental change counteractive action programs. The arrangement should utilize local gatherings as a channel for environmental change correspondence, particularly for more prohibited gatherings, for example, ladies and those with bring down training levels, who as of now have less familiarity with these issues. People need more education and awareness to recognize that climate change is a public health issue. A high level of understanding of the link between global environmental change and human health may help to increase the success rate of national climate change prevention programs. The plan should use community

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@ymail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

groups as a channel for climate change communication, especially for more excluded groups, such as women and those with lower education levels, who currently have less awareness of these issues.

REFERENCES

- Ahern, M., Kovats, R. S., Wilkinson, P., Few, R., & Mathies, F. (2005). Global health impacts of floods: epidemiologic evidence. *Epidemiologic reviews*, 27(1), 36-46.
- Australian Agency for International Development, & Downer, A. (2006). *Australian Aid: Promoting Growth and Stability: a White Paper on the Australian Government's Overseas Aid Program*. AusAID.
- Centers for Disease Control and Prevention. (2008). Atlanta: CDC; 2009. Program collaboration and service integration: enhancing the prevention and control of HIV/AIDS, viral hepatitis, sexually transmitted diseases, and tuberculosis in the United States.
- Charron, D., Fleury, M., Lindsay, L. R., Ogden, N., & Schuster, C. J. (2008). The impacts of climate change on water-, food-, vector-and rodent-borne diseases. *Human Health in a Changing Climate*, 171.
- Clark, R., & Gundry, S. W. (2004). The prominence of health in donor policy for water supply and sanitation: a review. *Journal of water and health*, 2(3), 157-169.
- Deaton, Y. (2015). Ecosystem services in practice: well-being and vulnerability of two European urban areas.
- Dhara, V. R., Schramm, P. J., & Lubber, G. (2013). Climate change & infectious diseases in India: Implications for health care providers. *The Indian journal of medical research*, 138(6), 847.
- Esrey, S. A. (1996). Water, waste, and well-being: a multicountry study. *American journal of epidemiology*, 143(6), 608-623.
- Frumkin, H., Hess, J., Lubber, G., Malilay, J., & McGeehin, M. (2008). Climate change: the public health response. *American journal of public health*, 98(3), 435-445.
- Funari, E., Manganelli, M., & Sinisi, L. (2012). Impact of climate change on waterborne diseases. *Annali dell'Istituto superiore di sanita*, 48, 473-487.
- Githeko, A. K., & Woodward, A. (2003). International consensus on the science of climate and health: the IPCC Third

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@gmail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

Assessment Report. *Climate change and human health: risks and responses*, 43-60.

Haines, A., Kovats, R. S., Campbell-Lendrum, D., & Corvalán, C. (2006). Climate change and human health: impacts, vulnerability and public health. *Public health*, 120(7), 585-596.

Hales, S. (2003). *The Roman house and social identity* (p. 125207). Cambridge: Cambridge University Press.

Hamner, J. B., Sims, T. L., Fraga, C. H., Ng, C. Y., Rajasekaran, S. & Davidoff, A. M. (2007). Bevacizumab-induced transient remodeling of the vasculature in neuroblastoma xenografts results in improved delivery and efficacy of systemically administered chemotherapy. *Clinical cancer research*, 13(13), 3942-3950.

Kovats, R. S., Campbell-Lendrum, D. H., McMichael, A. J., Woodward, A., & Cox, J. S. H. (2001). Early effects of climate change: do they include changes in vector-borne disease?. *Philosophical Transactions of the Royal Society of London B: Biological Sciences*, 356(1411), 1057-1068.

Lafferty, K. D. (2009). Calling for an ecological approach to studying climate change and infectious diseases. *Ecology*, 90(4), 932-933. Malik, V., & Sun, Q. (2012). White rice consumption

and risk of type 2 diabetes: meta-analysis and systematic review. *Bmj*, 344, e1454.

Martens, H., Martínez Rica, J. P., ...& Oliveira, M. E. (1997). *Atlas of amphibians and reptiles in Europe* (p. 496). J. P. Gasc, A. Cabela, & J. Crnobrnja-Isailovic (Eds.). Bonn, Germany: Societas Europaea Herpetologica.

McMichael, A. J. (2003). Global climate change and health: an old story writ large. *Climate change and human health: Risks and responses*. Geneva, Switzerland: World Health organization.

World Health Organization. (2003). Monitoring maternal, newborn and child health: understanding key progress indicators.

World Health Organization. (2010). GLAAS 2010: UN-water global annual assessment of sanitation and drinking water: targeting resources for better results. GLAAS 2010: UN-water global annual assessment of sanitation and drinking water: targeting resources for better results.

World Health Organization. (2011). Monitoring maternal, newborn and child health: understanding key progress indicators. *Geneva: WHO*.

Zwane, A. P., & Kremer, M. (2007). What works in fighting diarrheal diseases in

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@gmail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com

developing countries? A critical
review. *The World Bank Research
Observer*, 22(1), 1-24.

IJSER

Author 2: Nazia Rafiq, Lecturer Department of Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: naziarafiq@gmail.com

Author 3: Zetoon Bibi, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Zara.khan94@gmail.com

Author 4: Haroon Kamal, MPhil Sociology, PMAS Arid Agriculture University Rawalpindi, Pakistan. Email: Haroonkamal1321@gmail.com