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Mental Health Scenario of Climate Migrant Women among Slum Dwellers in Dhaka City

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Abstract

Climate change is a global challenge which is likely to affect the mankind in substantial ways. Not only climate change is expected to affect physical health, it is also likely to affect mental health. Increased frequency of disasters with climate change can lead to posttraumatic stress disorder, adjustment disorder, and depression. Changes in climate may require population to migrate, which can lead to acculturation stress. It can also lead to increased rates of physical illnesses, which secondarily would be associated with psychological distress. Using a qualitative approach, this research explores the mental health status of migrant women in two urban slum areas in Dhaka city. The purpose of this study is to perform a review of existing secondary data and present mental health scenario of climate migrant women among slum dwellers and amplified gaps in knowledge regarding psychological health care system in Bangladesh. It is found that there is a lack of mental health preparedness and response in majority parts in the country specially the city slum, where aid cannot be reached to the sufferers. The paper concludes with a discussion of what can and should be done to tackle the expected mental health issues consequent to climate change and migration.

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Introduction

Dhaka, the capital of Bangladesh, is one of the fastest growing megacities in the world. In 2005; approximately 3.4 million out of the city's 12.6 million inhabitants were living in slums [1] [2]. Today, the city comprises approximately 14 million inhabitants [2] with more than 300,000 new migrants, mainly the rural poor, moving to Dhaka each year [3] [4]. As most of these new immigrants initially concentrate in slums, Dhaka's population growth led to an increase in the proportion of slum dwellers from 20% in 1996 to 37% in 2005, which presents a daunting challenge for local health authorities [1, 5].

Climate related disasters such as floods, hurricanes, and bush-fires are often associated with stress-related psychiatric disorders. Individuals who have been exposed to life threatening situations are at a considerable risk of developing posttraumatic stress disorder (PTSD) [6, 7]. The symptoms of PTSD include flashbacks of the event, increased arousal and avoidance of cues to the memory of the event. In many cases, the symptoms of PTSD may have a delayed onset, months to years after the experiencing of threatening disaster situation [8, 9]. Development of PTSD is associated with impairment in the quality of life and significant subjective distress [10].

Individuals who have been through the experience of climate related natural disaster are not only at a higher risk of developing PTSD, but also at a greater risk of developing acute stress reaction and adjustment disorder [11, 12]. These disorders are anxiety spectrum disorders which can subside over a period of time with rehabilitations and/or treatment. Other stress exacerbated disorder includes development of acute and transient psychosis and relapse of bipolar disorder. Faced with the loss of home, environment, social structures and loved ones, an individual may develop a bereavement (grief reaction) or depression. The depression is likely to be more pronounced in those who live in small rural communities, than those living in big cities [13]. As the impact of climate change seems to be increasing over the time period, it is likely that a greater proportion of the population would be impacted by the mental health consequences of climate change related disasters [14].

Although the number of mental health professionals in Bangladesh is significantly inadequate, Govt. of Bangladesh has positive policy regarding the training of graduate doctors and civil surgeons, health assistance, nurses and religious leaders is a welcoming step towards wider acceptance of the magnitude of psychological problems after disaster and provide support service to reduce mental stress and trauma. The change in the approach of psychological support to reduce mental stress and trauma first came in 1996, when a NGO named as "Social Assistance and Rehabilitation for Physically Vulnerable (SARPV, 1996)" reporting 66% of tornado affected people in Tangail district were psychologically traumatized [15, 16]. In 2011, Asian Disaster Preparedness Center (ADPC) organized a pilot training with BRAC Bangladesh to establish a system of enhancing the capacities of communities in psychological first aid to be able to manage victims immediately after disaster. However, as it was a pilot training program so there is no permanent footstep in this arena [17].

The lack of data on the burden of disease morbidity and mental health status in slums hampers the efficient allocation of health care initiatives and the provision of appropriate disease prevention services [18]. Given that psychological well-being is associated with physiological well-being [19], assessing the factors that describe the mental well-being of poor populations residing in urban slums is urgently needed.

Attention has been drawn to the variety of health impact of climate change. Global climate change is likely to be associated with spread of vector borne diseases, injuries and deaths due to extreme weather conditions such as floods, storms, and cyclones, thermal injury due to exposure to heat, risk of spread of water-borne infections due to floods and coastal water warming, and reduction in regional crop yields leading to malnutrition [20, 21, 22, 23, 24]. The impact of global climate change on health is likely to be substantial. Mental health comprises an important component of health and is also likely to be affected by global climate change. The present narrative review discusses the current mental health scenario of climate migrant women among slum dwellers in Dhaka city.

Objectives of the Study

To manifest the current mental health scenario of climate migrant women among slum dwellers in Dhaka city.

To suggest some recommendations for focusing psychological impacts during and after migration in the context of climate change.

Methodology of the Study

In order to understand the current mental health scenario of climate migrant women among slum dwellers in Dhaka city. Principal data collection method used documentation Research site selections depend on the general information which collected from documentation survey. The researcher conducted the study on secondary data. The systematic review has done according to the Preferred Reporting Item for Systematic Review and Meta- Analysis (PRISMA) standard [25] [26].

Eligibility Criteria and Search Strategies

A litterateur search was conducted in August 2019 to identify article/ Journal papers provide evidence of disaster mental health practice in Bangladesh. This study used an extensive collection of search methods in the literature review. The search plan was used varied publications with a combination of subject title and free text searching such as mental health in disaster, effect of disasters in psychology, psychological intervention during and after disaster, mental disorder, community mental health services for climate migrant women, disaster psychology and Bangladesh etc. Most of the investigations were found in Google Scholar. Additional literature was gathered through institution research, project papers etc.

Inclusion and Exclusion Criteria

This study included that described the concept of mental health management in natural disasters, the existing practices of psychological intervention in Bangladesh, gaps in psychological first aid in different context. This systematic search has been retrieved from articles published between 1996 to 2018 s the term mental health recognized in late 1996 in the focus was unrelated to the purpose.

Selection of Articles and Analysis

In the beginning articles were selected based on their titles but later based on their abstracts to eliminate that did not meet up inclusion criteria. In this systematic review, the articles were derived from both qualitative and quantitative studies. Some international articled were also reviews to compare the case in the subject of mental health and after disaster climate migrant women deprivation among Bangladesh and other countries. Researchers have been followed thematic analysis process and also employ data triangulation method in order to have a thick description.

Data Extraction and Management

Data on authors, year of publication, method, target group, study design and assessment tools used were extracted by the authors. Results from the selected papers were extract and gathered in summary. Included paper were grouped by subject and fields of determine once the data were completely collected.

Literature Review

Relation Between Disasters with Climate Change and Psychology

Psychological research has shown that disasters with climate change can cause serious mental health consequences for victims. The consequences take the form of Post- traumatic stress disorder and variety of other disorders and symptoms, which, have less investigated. In 1944, Lindemann published an observation of the psychological aftermath of the *Coconut Grove* night club fire in Boston. It was concluded like the more stress defined in a variety of ways within disaster; the more likely there are to be emotional consequences. Besides the observations of the psychologists have in attempting to relieve distress of victims, disasters have a relationship to several important psychological constructs. Disasters allow psychologists to perceive the operation of trauma on emotional functioning, an operation, which mental health practitioners as far back as Freud have been interested in understanding [27] [28]. The sociological points of view focused that the majority of people may function adaptively during and after a disaster but the individuals will experience panic, wander aimlessly [29]. It is clear that disasters cause psychopathology but it is

less clear that what from that psychopathology but it is less clear that what from that psychopathology takes. Science the mental health profession developed the PTSD (Post-Traumatic Stress Disorder) diagnosis; PTSD has been the focus of research on the aftermath of disaster [30].

Existing services for people with psychological trauma in disasters through semi-structured interview that found 8 services, 7 of them in Dhaka and 3 of them working with children cognitive behavior, therapy and counseling [31]. The factors associated with mental health of an arsenic patient using Cross-sectional study and represented overall general health of arsenic affected patients [32]. Sustainable basis for effective post disaster mental health services by community based actions resulted the mental health and psychological support framework [33]. The mental health scenario of Bangladesh during disaster preparedness used quantitative approach that disclosed Bangladesh has no special team or organization for disaster related psychological difficulties [34]. Therefore, it is an essential part in disaster research, particularly with regard to disaster response in trauma management to the people by providing counseling and therapy services [35].

Health Condition of Climate Migrant Slum Women

The Ministry of Health itself admits that the health indicators for the urban poor are worse than for the rural poor, due to the unavailability of urban primary health care and poor living conditions [36]. Mookherji and Bishai (2006) in their Paper "The Demand for Health Care among Urban Slum Residents in Dhaka, Bangladesh", reveal that urban health systems in Bangladesh must work to improve access to care by the poor. Evidence from this study also shows that the urban poor view health care as both an investment in future productivity and as a consumption good; as such, urban health policy should view pre-paid financing schemes as a practical strategy for caring for the urban poor [37].

Khan M.M. H. et al., (2008) conducted a cross sectional study on "Socio-economic factors" explaining differences in public health-related variables among the women in Bangladesh. They found that a significantly higher percentage of women living in slums who came from the countryside, had a poorer status by household characteristics, had less access to mass media, and had less education than women not living in slums[5]. A study conducted by the Divisions of Infectious Disease and Epidemiology, School of Public Health, University of California (2007) on "Slum health: Diseases of neglected populations". The study found that constant neglect of ever-expanding urban slum populations in the world could inevitably lead to greater expenditure and diversion of health care funds for the management of end-stage complications of diseases that are preventable [38, 39].

Centre on Housing Rights and Evictions (COHRE), Women and Housing Rights Program (2008) are working on "Women, Slums and Urbanization" across the Americas, Asia, and Africa. COHRE interviewed women and girls living in six global cities, representing some twenty different (and indeed, diverse) slum communities. The stories shared by these women and girls elucidated the very personal struggles which women face in their day-today lives, as well as the broader connections that these struggles have to issues of gender-based violence, gender discrimination, and women's housing insecurity. In turn – as this report makes clear – for women, these issues are themselves intimately connected to the global trend towards urban growth [40].

Vijay M. S. (2010) conducted a research titled "Does illiteracy influence pregnancy complications among women in the slums of greater Mumbai". In this study, he examines utilization of health services available to the women in the slums of hilly area in Mumbai and checks whether no utilization of antenatal care (ANC) and having reproductive health problems during pregnancy create complications during child delivery vis-à-vis standard of living index constructed from household amenities, housing quality, drinking water, electricity and toilet facilities. Using cluster sampling of a sample size of 346 reproductive women who have given at least one live birth prior to the survey on the education of the study women, antenatal care indicators, antenatal check-ups and reproductive health problems during pregnancy and complications during child delivery among the slum dwellers of Ramabai Nagar was studied. The findings using logistic regression

reveal unimaginably low level of utilization of health services by illiterate women in the study area. Besides these, there is evidence that these respondents did not go for ANC and faced reproductive health problems during pregnancy that created problems during child delivery, particularly to illiterate mothers. Therefore, we can conclude that women's condition in slum area is severe [41].

Additionally, changing lifestyles, malnutrition, persistent social inequality, economic insecurity, and unstable social life have given rise to new health challenges-non-communicable diseases, substance misuse, and mental health problems [42].

Climate Change Impacts on Mental Health in Bangladesh

Mental health is deeply influenced by long lasting climate events that can cause significant psychological stress such as anxiety and depression. UNFCCC 4th report on global warming stated that a tropical country like Bangladesh has direct relationship between climate change and presence of major illness- acute psychosis and schizophrenia. Extreme climatic events like heat stroke, which manifest as delirium and other neuro-psychiatric syndromes characterized by altered consciousness to agitation, restlessness, unconsciousness and even death. Major population displacement after an extreme climate event would cause social disruption, unemployment, social conflicts, mental unrest and economic burden, uncertainly. All this factors are associated with increased with increased prevalence of mental disorders like anxiety, depression and stress disorders. All this factors are associated with increased prevalence of mental disorders like anxiety, depression and stress disorders. Besides, increase salinity water in coastal area would hamper food production, which results malnutrition and mental development disorders in the country. The extreme climate change events cause immense psychosocial stress especially among the women as vulnerable group in the society.

A survey among Asian Tsunami affected population by WHO revealed that 30-40% of population suffered from moderate to severe mental disorders. Natural disasters have shown increased domestic violence due to frustration and anger. A study in the state of Orissa in India concluded that mental disorder as depression and PTSD were increased among post flood affected population after one year [43]. Drought is another serious consequence of climate change, which causes food scarcity, hunger and malnutrition. It contributes to mental agony and depression among farmers in Bangladesh due to financial hardship and thus, increases suicide rate among them [44].

Current Mental Health Scenario in Bangladesh

Some of the reasons for this are the large number of people who are vulnerable, poor warning system, inadequate emergency response to disasters, poor preparedness and mitigation measures for disasters. Pre-disaster factors like lower economic status, shoddy quality of housing and poor connectivity also exacerbate the damage. Bangladesh has traditionally vulnerable to natural disasters like earthquake, cyclone and flood because of its unique climate condition [45, 46, 47]. A study conducted by Action Aid after 2 months of cyclone Sidr in 2007 found that 25% of 750 survivors experienced with Post-traumatic stress disorders including 18% had major depression, 15% had anxiety disorder and 16% had somatoform disorder [48]. Epidemiology projections made by WHO, Bangladesh revealed that post disaster health problems range from mild distress to very serve mental health problems. Almost 20-40% the affected population suffers from mild psychological distress and 30-50% suffers from moderate to severe psychological distress in Bangladesh. A majority develops new psychological disorder and those with pre-existing mental disorders need even more care than before [49]. A recent report of Climate Change Cell of Department of Environment of Bangladesh mentioned that the annual incidents of mental disorder are 22431 per year. It indicates the need for prioritization of mental health in national adaptation of climate change and disaster management in the country. It indicates the need for prioritization of mental health in the health component of National Adaptation program of Action for climate change of Bangladesh [44].

Common Psychological Reactions in Climate Effected Disaster Phases of Bangladesh

The psychological relations following disasters are normal responses to an extraordinary stressful

situation and are to be expected under such circumstances [45]. Tab 1.

Using a geo-epidemiological approach, the study by Gruebner et al., 2012 identified factors that contribute to the mental well-being in the slums of Dhaka. From this study informed about the status of mental well-being in Dhaka's slums. The important factors that determine the mental well-being relate to the socio-economic (job satisfaction, income generation ability, population density) and physical environment (environmental pollution, lower flood risk, better sanitation and quality, sufficiency and durability of the house). Individual level characteristics such as diseases, gender, and knowledge upon environmental health threats are important mental well-being determinants [50].

Existing Policy Regarding Mental Health in Climate Change Disasters in Bangladesh

The country has an old mental health policy named as Lunacy Act in 1912, when the country was still a British colony. The term lunatic means "an idiot or a person with unsound mind". This policy reflects an outdated perception of mental illness and health. In 2006, Bangladesh adopted a mental health policy, strategy and plan as a part of its effort in promoting surveillance and preventing non-communicable diseases [51].

At present, there is no special team or committee for the management of disaster-related psychological problems in the country. Psychiatric services are not incorporated yet in the existing health sectors disaster relief plans and services. The National Institute of Mental Health (NIMH) officers has been trained in basic mental health issues for the UHC (primary level). Trained field workers and religious leaders also help patients by providing psychological support and proper guidance and referral to seek medical care [34].

Existence Mental health Service in Bangladesh

As the number of total psychiatrists and the psychiatric works is significantly inadequate to provide psychological support to disaster victims, the mental health sector has undertaken policies with collaboration of world Health Organization (WHO) and govt. to increase the number of trained up graduate doctors, field workers in the primary health sectors. Bangladesh psychiatry recently has undertaken a policy to organize community psychiatry service. For the world country, there are 90 psychiatrists, 15 clinical psychologists, 2 psychiatric social workers and 1800 beds. The National Institute of Mental Health and Research has thus far conducted training for 3000 doctors, 90 GPs, 25 civil surgeons, 5500 health assistants, 72 nurses and 200 religious leaders. It has also started rehabilitation and liaison services and training on mental health awareness program [52].

Non- govt. Activities Towards Psychosocial Intervention in Disaster Management of Bangladesh

The BRAC team and Dhaka Medical College Hospital (DMCH) has continued their support on updating the patient' profile with complete address and contact details and re-assessing the admitted patients' psychological conditions. This team is working jointly with the National Institute of traumatology and Orthopedic Rehabilitation (NITOR) and Centre for Rehabilitation of the Paralyzed (CRP), to update the common patients' profiles, listing the patients who have lost their limbs and will require rehabilitation support later. Aside from the medical teams, BRAC has dispatched four psychological trauma counseling teams comprising of four to six counselors from HNPP, community employment program, disaster, environment and climate change program (DECC), gender justice and diversity programed BRAC University. The term will continue with the assessment process and start psychological trauma counseling support from 28Th April [53]. World Health Organization, Bangladesh is working on disaster preparedness plan on mental health.

Mental health Challenges of Climate Migrant Women Slum Dwellers in Dhaka, Bangladesh

Increased Mental Health Problems Rate

First, rate of a wide range of mental health problems increase as the result of emergencies:

- Within conflict- affected populations, robust studies have shown that the prevalence of depression and post-traumatic stress disorder (PTSD) increases substantially.

Table 1. Psychological reactions in different phases of disaster in Bangladesh

Phase	Pre disaster	During Disaster	Early Post Disaster	Recent Post Disaster	Remote Post Disaster
Periods	Days to hours	Hours to days	Days to weeks/months	Months to years	Years
Psychological Disturbance	Apprehension	Acute Stress	Adjustment reacts	Abuse	Adoption
	Helpless	Anxiety	Nightmares	Poverty	Personality
	Restless	Confused	Panic disorder	Anxiety	Dysthymia
		Death wish	PTSD symptoms	Depression	Substance misuse
		Less appetite	Relationship issue	Truancy	Foster families
		Depression	Sexuality issue	Complete grief	Anxiety
		Grief	Suicide		Depression
		Hopeless	Superstitions		School dropout
		Insomnia	Dissociation		
		Guilt	Somatic problem		
		Heroism			
		Panic			
		Numbing			

Source: Kar, 2012

- A range of mental health problems –not only PTSD – are concerning: the ongoing needs and vulnerabilities of people with pre-existing severe mental disorders such as schizophrenia or bipolar disorder; those with pre-existence or emergency-induced mood, anxiety, and alcohol and drug use disorders, and the vast number of people who do not have mental disorders but experience psychological distress.

Weakened Mental Health Infrastructure

Secondly, simultaneous with the increased needs and demand for services, existing mental health infrastructure may be weakened because of emergencies. Buildings can be demand, electricity and water supply lines for essential medicines can be disrupted. Health workers may themselves fall victim to the emergency thought injury, death or forced displacement. In some cases, they need to look after their own families or friends before fulfilling their professional duties.

Difference in Coordination

Third, during major emergencies with acute onset, a sudden surge of aid agencies into a country can result in a chaotic situation, in which it can be nearly impossible to keep track to who is providing support and what they are doing. Coordination of aid agencies is resource-intensive, but failure to coordination services creates duplication of efforts, while segments of the population remain underserved. Other risks associated with the rapid influx of mental health and psychosocial assistance in the acute phase of emergencies includes an over- focus on PTSD while other mental health problems are ignored [54].

Recommendations

Some of the following suggestions are given to increase and implement action plans on psychological support for climate migrant women in Dhaka city slum.

Prior Preparedness Action

This includes the overall planning and organizational response to the immediate psychological need, Proper tanning must be given to personnel and stuff.

Rapid Preliminary Assessment Damage and Mental health Needs after Disaster

Country should conduct Mental Health situation analysis, where local community can be involved by:

- General and social demography od community
- Identification of mental health needs and psychological problems faced by the people
- Evaluation of mental health services and programs
- Determination of priorities and target groups for immediate actions

Psychological First Aid by Unspecialized Personnel

Primary healthcare workers, volunteers, search and rescue personnel, humanitarian workers and community agents are first responders' following the disaster. As they have direct contact with the population so, they can provide psychological first aid immediately after the disaster.

Specialized Care

Specialized care should be reserved for more complex cases of mental disorder. The mental health service should be linked to the primary health care. This includes:

- Assessment of Specialized human resources and their distribution, the coverage they provide and the existing support network
- Provision of direct specialized clinical care for persons such as psychiatric hospitals or depart-ments, community mental health services, temporary mobile health care services in the affected sites etc.
- Priority for highly vulnerable risk group
- Care for the members of first response them

Training on Mental Health and Psychological Support

- Availability of support and teaching tools
- Distribution of publication on mental health and psychological support
- Training for the health workers and the other agents
- Follow up training process in the services

Health Education

- Ensure available and easily understandable educational materials
- Group- awareness raising educational activities during emergencies
- Implement health promotion and educational activities with the participation of community organization

Enhance Social Communication

- Advice authority to build an effective social communication strategy
- Involve key political players
- Inform and motivate service providers about psychological issues
- Design and directed messages of psychosocial issues to the target population
- Prior preparedness Action
- Rapid preliminary Assessment of damage and Mental health needs after disaster
- Psychological first Aid by unspecialized personnel
- Specialized care
- Training on mental health and psychological support
- Health education
- Enhance social communication
- Managing trauma in special group

References

1. CUS (Centre for Urban Studies), NIPORT (National Institute of Population Research and Training), MEASURE Evaluation: Slums of Urban Bangladesh: Mapping and Census, 2005. (2006). Dhaka, Bangladesh and Chapelhill, USA.
2. UN (United Nations). (2010). World Urbanization Prospects. The 2009 Revision. New York: United Nations Department of Economic and Social Affairs Population Division (DESA).
3. Afsar, R. (2000). Rural-urban migration in Bangladesh: causes, consequences, and challenges. University Press.
4. World Bank. (2007). Dhaka: Improving Living Conditions for the Urban Poor. The World Bank.
5. Khan, M.M.H and Kraemer, A. (2008). Socio-economic factors explain differences in public health-related variables among women in Bangladesh: A cross-sectional study. *BMC Public Health*. *8*: 254. DIO: 10.1186/1471-2458-8-254.
6. DeSalvo, K.B., Hyre, A.D., Ompad, D.C., Menke, A., Tynes, L.L., Muntner, P. (2007). Symptoms of posttraumatic stress disorder in a New Orleans workforce following Hurricane Katrina. *Journal of Urban Health*. *84*:142–52.
7. McMillen, C., North, C., Mosley, M., Smith, E. (2002). Untangling the psychiatric comorbidity of posttraumatic stress disorder in a sample of flood survivors. *Compr Psychiatry*. *43*:478–85.
8. Norris, F.H., Murphy, A.D., Baker, C.K., Perilla, J.L. (2004). Postdisaster PTSD over four waves of a panel study of Mexico's 1999 flood. *Journal of Trauma Stress*. *17*:283–92.
9. John, P.B., Russell, S., Russell, P. S. (2007). The prevalence of posttraumatic stress disorder among children and adolescents affected by tsunami disaster in Tamil Nadu. Disaster Manag Response. *5*:3–7.
10. Tan, H.Z., Luo, Y.J., Wen, S.W., Liu, A.Z., Li, S.Q., Yang, T.B., et al. (2004). The effect of a disastrous flood on the quality of life in Dongting lake area in China. *Asia Pac Journal of Public Health. 16*:126–32.
11. North, C.S. (2014). Current research and recent breakthroughs on the mental health effects of disasters. Curr Psychiatry Rep. *16*:481.
12. Viswanath, B., Maroky, A.S., Math, S.B., John, J.P., Cherian, A.V., Girimaji, S.C., et al. (2013). Gender differences in the psychological impact of tsunami. *International Journal Social Psychiatry*. *59*:130–6.
13. Ginexi, E.M., Weihs, K., Simmens, S.J., Hoyt, D.R.

(2000). Natural disaster and depression: A prospective investigation of reactions to the 1993 midwest floods. Am J Community Psychol 2000. *28*:495–518.

14. Parry, M.L., Canziani, O.F., Palutikof, J.P., van der Linden, P.J., Hanson, C.E. (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the IPCC.

15. Choudhury, W.L., Ahmed, F.Q. and Haque, Z. (2006). Mental Health and Psychological Aspects in Disaster Preparedness in Bangladesh. International Review of Psychiatry. *18(6):* 4930494. DOI: 10.1080/09540260601037664.

16. Satapathy, S. and Subhasis, B. (2009). Disaster Psychological and Mental Health Support in South and South-East Asian Countries. *Journal of South Asia Disaster Studies*.

17. Asian Disaster Preparedness Center (ADPC). (2016). Bridging the Gaps in Mental Health and Psychosocial Support in Emergencies in Asia. *Building Resilience to Disaster*.

18. Riley, L., Ko, A., Unger, A., Reis, M. (2007). Slum health: Diseases of neglected populations. *BMC International Health and Human Rights*. *7*: 2. DIO: 10.1186/1472-698X-7-2.

19. Prince, M., Patel, V., Saxena, S., Maj, M., Maselko, J., et al. (2007). No health without mental health. *Lancet*. *370*: 859-877. DIO: 10.1016/S0140-6736 (07)61238-0.

20. McMichael, A.J., Woodruff, R.E., Hales, S. (2006). Climate change and human health: Present and future risks. *Lancet*. *367*:859–69.

21. Pilkey, O.H., Cooper, J.A. (2004). Climate. Society and sea level rise. Science. *303*:1781–2.

22. Lipp, E.K., Huq, A., Colwell, R.R. (2002). Effects of global climate on infectious disease: The cholera model. Clin Microbiol Rev. *15*:757–70.

23. Zhou, G., Minakawa, N., Githeko, A.K., Yan, G. (2004). Association between climate variability and malaria epidemics in the East African highlands. Proc Natl Acad Sci U S A. *101*:2375–80.

24. Majra, J.P., and Gur, A. (2009) Climate change and health: Why should India be concerned? Indian J Occup Environ Med. *13*:11–6.

25. Mother, D., Liberati, A., Tetzlaff, J. et al (2009). Preferred reporting items for systematic reviews and meta-analysis: The PRISMA statement. Annals of Internal Medicine. *151*: 264-269.

26. Roudini, J., Khankeh, H. R. and Witruk, E. (2017). Disaster mental health preparedness in community: A systematic review study. Health Psychology Open. DOI: 10.1177.

27. Albee, G. P. (1997). Speak on evil. American Psychologist. 52: 1144.

28. Dohrenward, B. P. (1998). Adversity, Stress and Psychopathology. Oxford University Press. England.

29. Wenger, D. E. et al. (1975). It's a matter of myths: An empirical examination of individual insight into disaster response. Mass Emergencies. 33-45.

30. APA. (2000). Diagnostic and Statistical Mental Disorders. Fifth Edition. DSM-5 Task. doi.org/10.1176/appi.books.9780890425596Force.

31. Pathan, T. and d'Ardenne, P. (2010). An Exploratory survey of Mental Health Services for Traumatized People in Bangladesh, *Asian Journal of Psychiatry*, *3 (3):*108-11.

32. Syed, H. E., Poudel, C. K., Sakisaka, K., Yasuoka, J., Ahsan, H. and Jimba, M. (2012). Quality of Life and Mental Health Status of Arsenic-affected Patients in Bangladeshi Population**.** *Journal of Health Population and Nutrition*. *30(3)*: 262–269.

33. Nahar, N. et al. (2014). Increasing the Provision of Mental Health Care for Vulnerable, Disaster-affected People in Bangladesh. *BMC Public Health. 14*:708.

34. Lak, K. (2006). The Mental health and psychosocial Aspects of Disaster Preparedness. World Health Organization.

35. Raymond, B., Flannery, Jr., and Georges, S., Everly,

Jr. (2000). Crisis Intervention: A Review. *International Journal of Emergency Mental Health*. 119-125.

36. Asian Development Bank. (2008). Asian Development Bank Report. 181.
37. Mookherji S. and Bishai D. (2006).The Demand for Health Care Among Urban Slum Residents in Dhaka, Bangladesh; Paper of the American Society of Health Economists, TBA, Madison.
38. Divisions of Infectious Disease and Epidemiology. (2007). Slum health: Diseases of neglected populations, School of Public Health, University of California, Berkeley, California, USA.
39. Baba, B. (2008). The Stock Adjustment Model of Migration: The Scottish Experience, Asian Social Science, *4(9):*35-40.
40. Mayra, G., Shyamala G., Agnes, K., Prabhjot K., Winter, K. and Victoria, R. (2008). Women, Slum and Urbanisation: Examining the Causes and Consequences, The Centre on Housing Rights and Eviction (COHRE), Geneva, Switzerland, pp. 3-7.
41. Vijay M. S. (2010). Does illiteracy influence pregnancy complications among women in the slums of greater Mumbai, *International Journal of Sociology and Anthropology*, *2(5)*:82- 94.
42. *The Lancet.* (2013). Health care for poor people in the urban slums of Bangladesh. *The Lancet*. Retrieved 21 January, 2020 from http:// dx.doi.org/10.1016/S0140-6736 (13)62295-3
43. Asim, M., Mekkodathi, A., Sathian, B., Elayedath, R., Kumar, N. R., Simkhada, P., and Teijingen, T. V. (2019). Post-Traumatic Stress Disorder among the Flood Affected Population in Indian Subcontinent. *Nepal Journal of Epidemiology*. *9(1)*: 755–758.
44. Khan, Z. R. (2010). Climate Change Impact on Mental Health. The Daily Star.
45. Kar, N. (2012). Disaster management: mental health perspective. Community Mental Health in India, Jaypee. India. . DIO: 10.5005/jp/books/11688_24.
46. Mohandas, E. (2009). Roadmap to India Psychiatry. *Indian Journal of Psychiatry*. DIO: 51:173179.
47. Rao, T. S. (2004). Managing impact of natural disasters: some mental health issues. *Indian journal of Psychiatry*. DIO: 46:289-292.
48. ActionAid, (2007). Healing the mind in the wake of Bangladesh cyclone. *Reliefweb*.
49. WHO Bangladesh. (2019). Disaster and Mental Health.
50. Gruebner et al., (2012). Mental health in the slums of Dhaka - A Geoepidemiological Study. *Licensee BioMed Central Ltd*.
51. Islam, A. (2015). Mental health and the Health System of Bangladesh: Situation Analysis of a neglected Domain. DIO: 10.11648.
52. National Institute of Mental Health. (2005). Strategy and work plan for vulnerable, disaster affected people in Bangladesh (2006-2015). *Report of the National Workshop*, Dhaka. Bangladesh.
53. Ahmed, A. (2019). Tackling the mental health crisis during the disaster. *brac*.
54. Maruf, M.M. (2018). Mental health status of adolescents in South-East Asia: Evidence for action. Dhaka. Bangladesh.