



Social Work Perspective on Disaster Vulnerability and Resilience in Botswana

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

Social work is committed to develop communities adhering to social justice, human rights, and respect for cultural diversity amongst people. It advocates for community sustainable development and protection from hazards/risks within the locality. While serving the person in the social environment, it is dedicated to the identification of hazards, risks, and vulnerabilities that could jeopardize livelihood sustainability and recovery from disasters. It takes cognizance of the burden climate Change places on the global social and physical environment and complicating other social pollutants with grave consequences on communities. Climate change with its damaging weather patterns has complicated the flooding, rains, drought episodes, and new health hazards that communities must prepare against. Botswana national disaster management policy and response plan promote community participation in disaster risk management. Despite, communities are vulnerable to diverse disasters (floods, windstorms, drought, torrential rains, and pollution) with a negative impact on their livelihoods and sustenance. Community vulnerability is increasingly complicated by climate change. The literature reveals that vulnerability resonates with the lack of hazards and risk knowledge, lack of preparedness and response systems, inadequate information on hazards and risks patterns in the community, and weak assessment of new threats and risks, and inadequate community disaster interventions. The paper proposes a community-based vulnerability and risk assessment management measures to build resilience.

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1. INTRODUCTION

Social work profession is committed to social justice, human rights, and respect for diversity amongst people and cultures. It advocates for citizen development and protection of communities from environmental hazards/risks. While serving the person in the environment, it is committed to the reduction of community vulnerability to disasters that could jeopardize human security [1]. This is necessitated by global, social, and economic environment that is burdened by the changing weather patterns and emergence of new social pollutants with grave consequences for communities. Climate change brings about increased flooding, frequent drought episodes, and new health hazards (human diseases). Although these changing weather patterns demand change in community lifestyle, livelihood, and daily adaptations, communities have not progressively developed programmes and appropriate climate-cultural adaptations. As such, the damaging effect of climate change on African community' livelihood and subsistence has had grave consequences, especially on subsistence farmers [2]. It complicated the already existing vulnerabilities from social and economic decline and poverty by increasing the episode of environmental hazards (droughts, floods, fires, pollution, and windstorms) and heightening the community poverty levels [3]. The World Conference on Natural Disaster Reduction [4] states that 2/3 of all disasters are climate or weather-related. The impact of these climate related disasters is multifaceted, complex, and, most importantly, with serious effects on human security. Families who previously owned large herds have suffered severe losses from prolonged drought spells and animal diseases. Therefore, disaster vulnerability reduces the community economic capacity to cope or respond adequately and leaving it with limited possibility for recovery and reconstruction. The failure to recover and reconstruct becomes an ingredient for continuous economic and social impoverishment for many [5]. The substantial loss of livestock by subsistence farmers due to environmental hazards is accepted as insurable risk and is not compensated by insurance companies. As such, the loss of livestock impoverishes families and complicates their vulnerability to other hazards [3]. Other means of subsistence based on the economy of the country are further complicated by the loss of jobs (retrenchments) in the mining industry, government, and parastatals. The loss of cash

income, the closure of mines, and corporate entities, add an economic burden to the already existing vulnerability. The economy cannot sustain high unemployment rates, crime, and skyrocketing food prices. This economic burden is experienced more by subsistence farmers, low income groups who depend on lost crops and livestock for their livelihood [6]. The loss of cattle and crops predisposes subsistence farmers to chronic poverty because they lack alternative economic means of survival (7: 5; 8: 295). The author based on his experience in the field of disaster risk management, community development, and based on the evidence from literature advocates for community resilient actions against environmental hazards and risks. As such, this article proposes a community vulnerability assessment and risk management to reduce stress levels to build adaptations and initiation of appropriate systems to enhance human security against environmental crises. The key concepts are; human security, vulnerability, hazards, risks, and environmental crises.

2. HUMAN VULNERABILITY AND HUMAN SECURITY

Human vulnerability relates to an individual's or community's lack of capacity to cope with specific threats at a certain point in time (9: 6a). Pelling and Uitto (5: 51) state that vulnerability is a product of physical exposure to natural hazards and human capacity to prepare for or mitigate and recover from any negative impacts of the disaster. Vulnerability to disaster refers to the exposure of a community to suffer losses or damage in the event that a disaster occurs. The complexity of disasters is compounded further by climate change that presents unpredictable weather patterns. As such, changes in weather patterns make development a complex process and speed up environmental degradation. The World Conference on Natural Disaster Reduction [4] states that 2/3 of all disasters are climate or weather-related. The impact of these disasters is multifaceted, complex, and, most importantly, with serious effects on human security.

Hawkins and Maurer [2] in New Orleans, examined the different types of social capital (bonding, bridging, and linking) to understand how residents survived the storms, relocated, and rebuilt their lives and communities. It was further intended to increase social workers' understanding of the nature of social capital and

how it can strengthen or hinder community development following a catastrophe. They found that homogeneous communities exhibited mere bonding but less bridging and linking social capital at societal and institutional level which is instrumental in speedy recovery during crises.

Furthermore, they found that the collapse of heterophilous disaster response especially at the national level, lack of pre-hurricane disaster preparedness, no Red Cross sanctioned shelters, no drivers for evacuation busses, and neglected levees all contributed to the magnitude of the disaster. They argued that communities that are economically and racially segregated find it difficult to build heterophilous bridging and linking social capital. They are at risk of damage from weather-generated disaster because of slow recovery and reconstruction processes due to lack of financial capital and political power [2]. This is the situation for communities in Botswana that have not strategically defined their environmental risk management measures. Communities that suffer severely from the impact of various environmental hazards are poverty stricken, discriminated against, and marginalized [3]. The IFRC (10: 1) asserts that the number, severity, and impact of environmental crises have been increasing dramatically due to climate change, environmental degradation, poverty and inequity, unplanned mass-urbanization, rapid population growth, and political conflict.

3. ENVIRONMENTAL CRISIS AND COMMUNITY STRESS

Environmental crises are catastrophic by nature and may generate chronic stress for communities. Environmental/accidental crises include outbreaks of human diseases, soaring violent crime, disasters (effects of environmental hazards), and crises of modern life (11: 256). Disasters (environmental crises) are an intersection between an environmental hazard and the vulnerability of individuals, families and / or communities leading to the disruption of normal life. Environmental crises damage property (houses), infrastructure (roads, structures, water supplies, telecommunications, and energy production centres, and cause deaths, physical and emotional injuries, and at times, displacements and separation of families. These accidental crises pressure affected households, families, and communities to absorb the shock and adapt with limited resources, hence increased stress levels. Fig. 1 shows the two types of life crises.

Environmental crises which fall under the accidental crisis, threaten the homeostasis (balance) of households, families, and communities. It is a stressful experience shaking the stability of communities, individuals, and families and their ability to function normally [12,13]. It may be a temporary state of disequilibrium sometimes with long-term consequences and accompanied by confusion and disorientation of the survivor. The disorganization may confuse their roles and responsibilities, disorientate the response, and cause panic which shrinks problem-solving abilities, sometimes to a point where normal coping strategies are not effective (14: 478; 12). The phases of crises are:

- Phase 1: Initial rise in tension from the impact of the stimulus calls forth habitual problem-solving responses.
- Phase 2: Lack of success and continuation of stimulus is associated with increasing upset and ineffectuality.
- Phase 3: Further rise in tension acts as a powerful internal stimulus and calls out emergency problem-solving mechanisms - novel methods to attack the problem, trial and error, and attempts to define the problem in a new way.
- Phase 4: As tension mounts beyond a further threshold, its burden increases to the breaking point. To avoid major disorganization the community employs restitutive methods to reduce anxiety and open up maladaptive pathways. These can lead eventually to the development of various psychiatric syndromes shown in the Fig. 2.

An accidental crisis generates anxiety in the survivors that manifests in diverse behaviors amongst community members. For example, avoidance of phobia generating stimulus (fear); some give up because of emotional exhaustion with possible depression or suicide; Some people may withdraw from dealing with the problem (withdrawal) or fail to face the changing reality using the projection or regression defense mechanism that may lead to psychosis; others suspend and block experience dissociation which activates posttraumatic stress disorder; substance abuse that may lead to addiction (drugs/alcohol); anti-social response (denial) that breeds delinquency and further into crime; suspension stress leading to psychosomatic stress activating cardiac problems, asthma, and crime; chronic anxiety and displacement.

Disasters are loaded with unpredictable potential to disrupt community functioning especially when the forgoing are unprepared. They destroy infrastructure, force people out of their traditional habitat, and disorganize community systems. For example, the Red Cross & Red Crescent Movement (15: 5) has shown that the complexity of multiple hazards as in Haiti, and in particular the earthquake, the hurricanes (Gustav, Hanna, and Ike and tropical storm Fay) that killed hundreds of people, left tens of thousands homeless, and aggravated chronic malnutrition in several parts of the country can generate mental consequences. Every time disaster-prone communities see and hear about the impending windstorms or earthquakes, and heavy rains, their anxiety levels rise. Increased anxiety levels create panic amongst community members and may complicate vulnerability and response to environmental hazards.

shock within a reasonable time period may adversely affects adjustment and reposition against the shock in the future. Failure to contain the shock temporarily pushes the community out of balance, increases fear and worry about the loss of livelihoods, and increased mourning hence mental health challenges. For example, floods in China are increasing in frequency and it is counted amongst the most disaster-prone countries in the world subject to flash floods, landslides, earthquakes, typhoons, and drought. These hazards ruin millions of hectares of farmland and livelihoods. Furthermore, poor rural sanitation and unsafe and unprotected water supplies present enormous health hazards. The effluent washed from crude village latrines contaminated surface and ground water. Soaring urban populations, environmental degradation, poverty, and disease compound seasonal hazard to create a situation of chronic vulnerability [16]. Floods have had adverse effects on African countries and their economies which are already are overstretched by normal day to day demands and unable to contain the huge economic losses as in China.

As such, community resources need to be mobilized proactively to manage and minimize the impact of environmental crisis. The failure to mobilize resources to contain the environmental

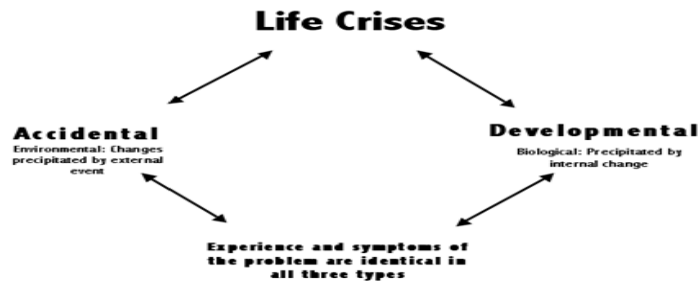


Fig. 1. Developed by Ivor Browne (12)

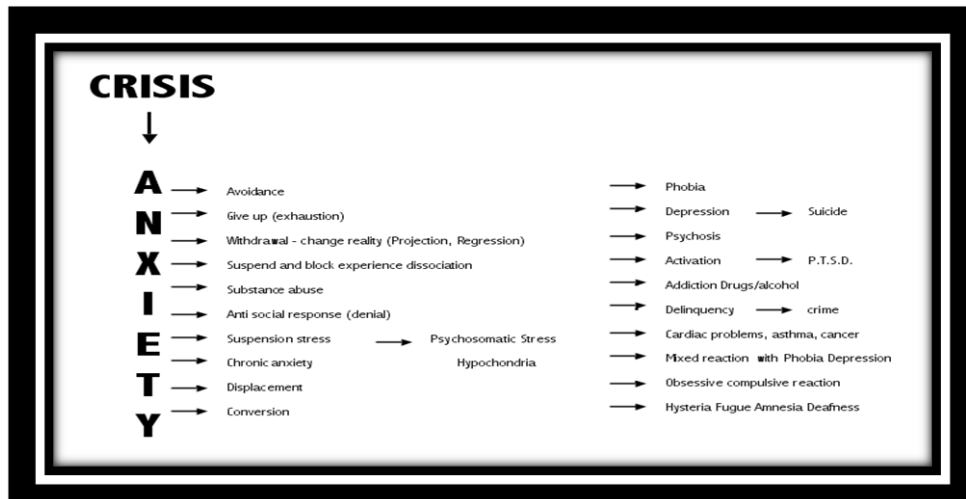


Fig. 2. Borrowed from Ivor Browne crisis theory (12)

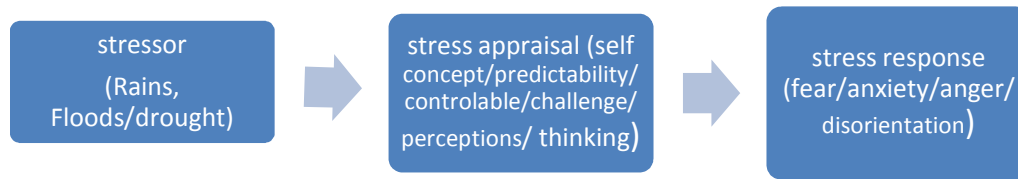


Fig. 3. Shows the process of stress response

4. STRESS THEORY

The stress from environmental crises varies depending on the severity, duration, and surprise of the stressor (event). In poor communities disasters have destroyed uninsured houses and livelihoods beyond the individual's or community's ability to recover, hence inevitable high levels of stress. Morris and Maisto (17: 477) argue that stress is an environmental demand that creates a state of tension and/or threat and requires change or adaptation from the community/ organization. The environment will place an inconsiderate demand on the community to respond with limited social, economic, and psychological resources, which are not always readily available. When demand resulting from disasters exceeds the capacity to contain it, stress results (18: 191). It is an aversive circumstance that threatens the well-being and functioning of organizations, neighborhoods, and communities or society (19: 127). The stress results from the characteristics of the hazard (floods/drought) (stressor), appraisal of the stressor (controllability, predictable, and challenge to limits of capabilities, assessment of the personal capacity to contain the stressor), the response to or effects of the stressor, and the various conditions that influence the relations between the stressor, stress appraisal, and stress response [19].

Fig. 3 above, shows the relationship between the stressor, stress appraisal and the elicited stress response. The stressor (environmental hazard), the appraisal of effects of the hazard by communities based on the capacity to cope, and the less the capacity, the predictability of high stress levels by vulnerable communities. The stress mounts high because of fear of loss by the community of the remaining assets and their worry because of the inability or weak response, and recovery system. Environmental disasters sometimes damage the recovery resources and delay the reorganization of community systems. The longer it takes to recover, the more stressful it becomes because of perceived future threats from the hazard (20: 193). For example, the loss of life is irreversible; a burnt house may not be

rebuilt, physical injuries may be permanent; and the loss of livelihoods may be difficult to reorganize after an environmental crisis. Environmental hazards (floods, earthquakes, hurricanes, war, and imprisonment) are cataclysmic events by nature. It means that these hazards/risks combined with daily chronic strain and the lack of resources to control the challenges compound the stress levels for communities and complicate their ability to cope with similar events in the future [21]. Chronic strain is induced by poverty, long-term unemployment, lack of income and support, family conflicts, and loss and/ or confusion of roles. According to Norris et al. (19: 128; 11) specific stressors that affect post-disaster mental health include:

- Bereavement.
- Injury to self or family member.
- Life threat.
- Property damage.
- Financial loss.
- Community destruction and displacement.

5. SOCIAL CONSTRUCTIVISM AND RESILIENCE IN ENVIRONMENTAL CRISIS

Social Constructivism theory is useful for environmental crises to analyze the transactions and interactions of community members and their preparedness to absorb the shocks. It is suitable to work with communities to generate community resilience knowledge against environmental crisis and cope better with stress. Cohen, Duberley, and Mallon [22] argue that knowledge is socially constructed as opposed to created and the theory is concerned with the nature of knowledge and how it is constructed. It emerged thirty years ago with its origins in sociology and associated with the post-modern era. Social constructivism facilitates the appreciation of how communities construct knowledge about environmental hazards and risks and manage that information on daily bases. Berger and Luckmann [23] assert that the interaction and transactions of people with their social world lead to the understanding of

society as both an objective and subjective reality. As such, this social world should influence communities to adopt routines and habits that promote and sustain resilience and reduce vulnerability to environmental crisis. The institutional social practices together with the disaster sensitive interactions and negotiations between relevant social groups should produce needed disaster knowledge to increase resilience and reduce vulnerability to environmental crisis [24]. But the current the habits and routines in communities in Botswana ascertain unpreparedness, inadequate response systems, and weak resilience to disasters. Therefore acquiring appropriate habits and routines will ensure efficiency and effectiveness in environmental risk management and acquiring the knowledge, and social actions that go together into resilience. It is critical to ask evaluative, political, and pragmatic questions on hazards and risks, and community perceptions on disasters, and ensure that appropriate actions are applied to protect the communities.

6. RESILIENCE THEORY

According to Folke (25: 40) resilience is the capacity of a system, be it an individual, a forest, a city, or an economy, to deal with change and continue to develop. Disasters disrupt the normal functioning of society in many ways from the marginal to the extreme where everything collapses, demolishes structures, and kill thousands of people (15: 6). Therefore, the resilience to withstanding shocks and disturbances (like climate change or financial crisis) and using events to catalyze renewal, novelty, and innovation need deliberate actions of communities. It is necessary for individuals, families, and communities to prepare to prevent or minimize disruption from situational crises. The resilience theory guides individuals, families, communities, and countries to anticipate, adapt, learn, and transform human actions to mitigate against the unprecedented challenges of the turbulent world (25: 41). Anticipation of crises and adaptation are supposed to products of deliberate efforts to learn from past events and proactively transform relevant human actions before an impending crisis occurs.

Disastrous disruptions are explained by the crisis theory as the unexpected change that demands resources that the affected may not have that translates to stress. The crisis (disaster/ hazard) is a trigger and a stressor for household and communities as is explained by stress theory.

The stress demands the affected to make appropriate adaptation, adjustment, shifts and to learn from the crisis. It also requires the community or household system to rapidly make proper and immediate adjustment to return to its equilibrium to be resilient as explained by the resilience theory. Tobin and Whiteford (26: 28) assert that community resilience is dependent on pre-existing social, economic, and political conditions as well as post-disaster response, relief efforts, mitigation strategies, and longer-term rehabilitation programmes. The functional equilibrium for individuals, families, and communities during a crisis is dependent on these capacities to sustain the perturbation. It is important to ascertain the likely traumatic events and possible consequences before a disaster occurs, and prepare for response accordingly. Norris et al (19: 129) argue that resilience can fail when resilience resources are redundant, that is when they are themselves damaged or disrupted by the stressor. The Fig. 4 shows the link between theories:

The crisis and stress theories explain the problems and the expected consequences that should be addressed based on the model of the ecological perspectives. The ecological perspective depicts the social environment with the related subsystems that must infuse within itself preparedness informed by the social constructivism theory to build the resilience in communities. The characteristics of a crisis are the dangers and opportunities, the seeds of growth and change, a state of disorganization and disequilibrium, and the breakdown in coping within the community. Furthermore, the community must deliberately identify the threats and assess the associated risks and prepare to cope with situational crises which have a sudden onset and are unpredictable. They must work on the perception that the possibility and probability of disasters to happen are quite high, and their preparedness to respond effectively and efficiently to the emergency to regain their stability is compulsory. The assessment gives an indication of what should be expected during and after a crisis by the community and gives an indication of whether survivors will emerge on a higher or lower functioning level. According to Norris et al. (19: 128) resilience is the process that produces adapted outcomes; the more rapid the return to pre-event functioning, the greater the resilience. A model of resilience to hazards that communities should use was adopted by Paton and Johnson (27: 271) borrowing from Bishop et al. [28] and Miller et al. [29]. It guides



Fig. 4. The theoretical linkages

the identification of hazardous effects, if the risk is low, mitigation measures are not needed, and if high, the perception of risk has to be high to lead to the assessment of problem-focused coping, self-efficacy, and a sense of community that will guarantee preparedness and psychological resilience.

7. ENVIRONMENTAL CRISES AND ECOLOGICAL INTERVENTION PERSPECTIVE

Social work practice is concerned with the person and the social environment which the ecological perspective describes adequately. The ecological perspective appraises social welfare problems and situations and determines appropriate for intervention for environmental crises (30: 49). The social environment includes but is not limited to homes, work, laws, policies and social rules in the community. All these may not have incorporated safety to hazards and related risks and may be contributing to the vulnerability of the people to environmental crises. As such, the assessment of interaction, communication, and transaction patterns at the microsystem (individual), mesosystem (relationship between microsystems), exo-system (settings like school boards, local government), and macro-system (community), the different levels of the social environment (30: 59) is the base for social system resilience. The constant interactions and transactions of community members with the various systems around must engage towards their resilience and reduction of vulnerability to disasters [11,30].

The ecological perspective shows where disaster risks management knowledge, measures, and practice should be integrated into the ecological transactions and interactions to improve community resilience. The perspective facilitates the exploration of how diversity, gender, and cultural differences play in the effectiveness or non-effectiveness of disaster prepared interactions. The exploration must target the community energy, adaptation, coping, and

interdependence prevailing in the social environment for use during and after disaster [30]. These social capital resources are crucial for community disaster preparedness, response, prevention, mitigation, recovery, and reconstruction thus reducing vulnerability. They provide the people exposed to hazards with ability and flexibility and quick adaptation during crises, hence the provision for a platform to develop resilience measures against disasters [31]. This perspective demands the development of appropriate policy interventions based on the mapped out disaster terrains, capacities, and vulnerability factors in communities. The interest is not only in the coping ability of communities but also their adaptation determined by monitoring the changing nature of hazards and risks and disaster patterns [30]. In addition, disasters like other crises, offer communities an opportunity for growth and development, thus reconstructing with the intention to reduce future vulnerabilities. Fig. 5 below shows the ecological subsystems at the macro, meso, and micro level, their pattern of interactions and transactions, and the interdependence between individuals and various systems that must be the targeted by community disaster interventions. The interactions and transactions must efficiently and effectively incorporate on the reduction of vulnerability and prevention of disasters and other environmental risks.

Aghabakhshi and Gregor (32:347) assert that social workers' skills in communication, networking, stress management, and therapeutic listening are fundamental in both immediate and long-term preparedness and responses to environmental disasters. Social workers also acknowledge that social capital sustains communities experiencing change when it is coupled with elements of trust, reciprocity, and mutuality. Hawkins and Maurer (2:1777), in their study of the New Orleans residents' use of social capital to survive Hurricane Katrina, found that homogeneous and heterophilous (diverse) interactions amongst residents are essential for effective response, recovery, and reconstruction

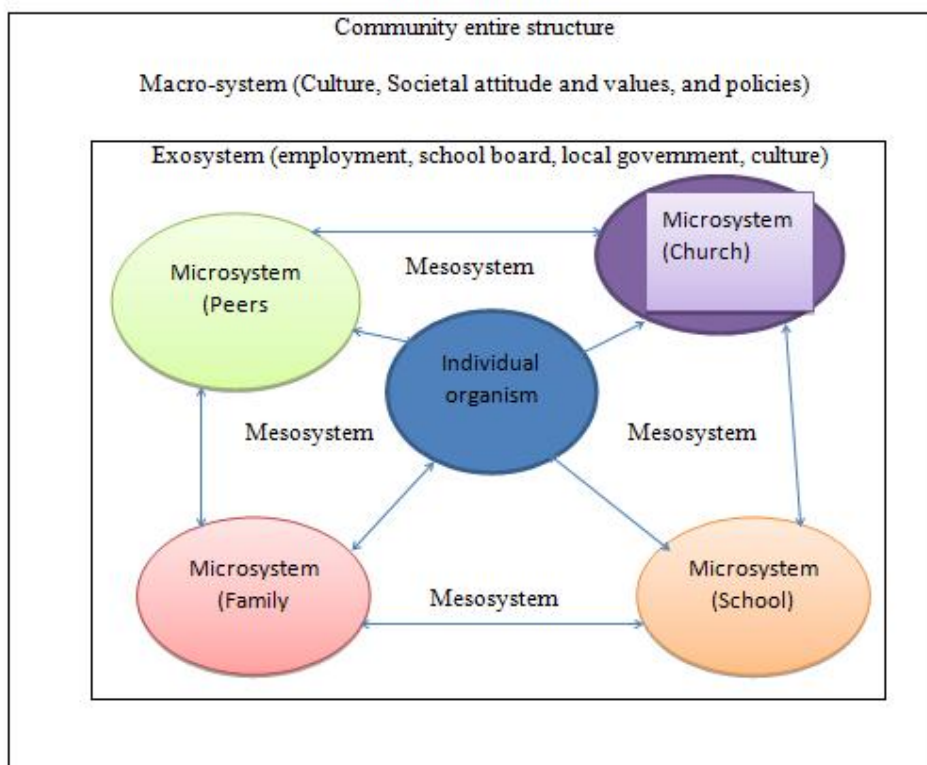


Fig. 5. Ecological perspective model (Understanding social work and Social Welfare) (29: 56)

after disasters. The social capital according to Airhihenbuwa (33:1) must seriously incorporate culture into its preparedness and response activities because the responders are assuming some roles and responsibility on behalf of the community. Therefore, culture is central to resilience knowledge production, distribution, and acquisition which are crucial for communities to survive hardships.

8. WAY-FORWARD IN ENSURING HUMAN SECURITY

It is imperative that community development practitioners should follow the ecological model to advocate against any policy and administrative issues that promote oppression, marginalization, poverty, and ostracism, which increase the risks and vulnerability of communities to environmental disasters. Reducing factors that accentuate deprivation, pollution, environmental degradation, and poverty, improves individual ability to cope with hazards and related risks. Social work community interventions in Botswana and in the African context must also assess the community's culture for resilience related actions packaged in their ethos and

beliefs and the possibility to transcend to the individual level for assimilation (34: 26; 35: 1; 11). The radical social work perspective endorses community safety and resilience to environmental hazards and risks an important subject for social workers in the macro practice. It is obligatory for social workers to ensure that community' culture promotes safety and resilience by strengthening preparedness capacity to bounce back, establish early warning systems (inclusive of indigenous knowledge), and for community members to monitor the changing nature of hazards. It is also important for social workers to conduct on-going action research with the various sub-systems in the community to provide guidance and developing best practices. It is these culturally built relationships, communication process, and interactions that ascertain the mitigation, preparedness, safety in response and resilience to environmental disaster (35:1).

9. CONCLUSION

It is imperative that social work based on its definition must ensure that individuals, groups, and communities promote human security by

reducing and minimizing the impacts of environmental threats. The measures must help in protecting property against damage; minimize the loss of lives and injuries and the displacement of families. Furthermore, reduce the stress levels of community members upon appraising the threats from environmental crises because they have built capacity to respond and prevent damage. The low-stress levels will contribute to improved community members and households' health and the management of anxiety that results from ill preparedness and fear of loss. In addition, the establishment of environmentally appropriate risk management and promotion of human security as part of culture must ensure the adoption of ethos and principles that upholds resilience to environmental crises. Resilience measures will enable the households and community members to absorb shocks and bounce back within a short time to continue with their day to day life. It enables people and communities to go back to a state of equilibrium and manage the turbulence without being disoriented. The best approach to strengthen the resilience of communities to disasters is the ecological perspective that guarantees that policies, culture, and institutions, and families are inclined more to risk management. Risk management must be integrated into all structures of the community from the highest to the lowest level and built within the daily life activities.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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