

A study on the Role of Social Capital in Disaster Risk Reduction and Resilience Building evidence from the coastal communities, Odisha, India

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Abstract

The purpose of this study is to highlight the role Social capital played in protecting the most vulnerable families and individuals in emergency and carried out series of preventive and preparedness strategies to effectively manage risk and crisis situation during the wake of disaster. The researcher primarily engaged qualitative methods of data collection like focused group discussion, key informant interview and observation. Men and women from the different occupation very much affected by disasters like flood and cyclone in the year 2011(great flood), 2013 (cyclone Phailin) and 2019 (cyclone Fani) participated in the data collection process. The empirical results suggest that social capital in the form of bonding, bridging and linking extended humanitarian support to the individuals, families and communities in pre, during and post disaster situation especially providing relief, rescue, and evacuation and above all solaced the people suffered from psychological and physical shocks due to horrendous loss of livelihood and infrastructure they witnessed. The immediate support, cooperation and help that the disaster victims received are they themselves. Before the govt. administration or any external help reaches, people in the communities helped each other for survival. Social capital for and with the most vulnerable people is like an informal insurance in cases of disasters.

These findings may be eye-opening fact for the readers, researchers, developmental professional and policy makers to formulate a road map to build resilient communities.

KEY WORDS: **-/ Preparedness; Social Capital; community recovery; cyclone, flood; emergency period; disaster risk reduction;*

1. Introduction

Earlier, disasters considered as “natural” and so known act of God that people neither prevent nor reduce an effect and impact of disasters. Therefore, damage and destruction in the wake of disasters continued to increase more with intensity and magnitude and that became a challenge for the poor and marginalized to sustain with dignity and livelihood opportunities. However, the paradigm shift took place in the year 1970s when the world leaders, the international organizations, development players and research scholars realized that the people’s vulnerabilities and ignorance are the main reasons of an adverse effect, which can be reduced (Keefe et al. 1976; Maskrey 1989).

The theoretical concept of social capital developed as a resource of shared values, norms, trust and reciprocity primarily play a vital role in resolving conflict and problems in and collective action and cooperation (Coleman, 1988; Putnam, 2000). Many researchers have shown evidence that social capital plays a contributory role in solving health related issues and challenges (Asri & Wiliyanarti, 2017; House, Landis, & Umberson, 1988; Pretty, 2003). For example, some studies show that the residents and regions in United States with high-level social capital effectively managed people to stay inside their homes to prevent and control the spread of COVID - 19 (Borgonovi & Andrieu, 2020, Varshney & Socher, 2020)

It is a pertinent fact that social, human, natural, financial, and physical capitals are inevitable resources people can utilize and come out of the disaster vulnerabilities. Government and non – government organizations carry out relief, rehabilitation and reconstruction program in an intensive and extensive manner to lessen the impact of disasters among the affected population (Shaw, Gupta, and Sharma 2003). However many researchers ask themselves: despite of enormous amount of resources poured into the communities for response and rehabilitation purpose, why have some communities implemented the program effectively and fulfil the needs of all people on time? While other communities unable to materialize the same program well and on timely manner. There may not be direct answer to it as this involves dynamic and socio- political, economic and religious issues of people that help them to carry out response and rehabilitation program effectively (Mallick et al. 2011b). However, this research paper made an attempt by engaging social capital as an answer to this question. Many disaster studies across many countries reiterate that social capital considered as invaluable resource played important role in managing risk and crisis effectively in pre, during and post disaster situations and benefited the community members in need (Aldrich, 2012a). There are studies, which focused mostly the impact of disasters on human and physical capital and only a few of them carried out the studies on the contribution of social capital in disaster risk reduction. Social capital is a bond, bridge and link, which act as important resources that facilitate to save human life from the crushing effect of disasters (Aldrich, 2012a). It is evident from the researchers point of view that disasters can destroy human, economic, physical and environmental capital but social capital is least affected; however, it can actually grow and act in abundance by saving human lives from the deadly effect and impact of disasters (Dynes, 2002). Social capital therefore considered as collective action and cooperation with trust and solidarity prepare individuals, groups and communities to respond to hazards and disasters effectively and able to bounce back from the shocks of disasters (Murphy, 2007, Bihari, and Ryan, 2012, Cutter, K.D. Ash, and C.T. Emrich 2014).

Social capital considered one of the most vital resources in both quantity and quality that binds families, groups and community members together like glue and make them stronger and resilient (Constas, Frankenberger & Hoddinott, 2014). This sense of bonding and belongingness between and among each other further help them to respond to any hazards and disasters without any stress any shocks. In this paper, resilience defined as a strength that absorbs shocks and stress arising due to the wake of disaster and bounce back from an adverse effect and impact of disaster without much loss (Constas, Frankenberger & Hoddinott, 2014). Building of resilience is inevitable at household and community level in order to reduce the risk and vulnerabilities of disasters. A Household is resilient when it

develops capacity to lessen the grieving impact of disaster and able to adapt to such situation during the wake of disasters. On the other hand “A community is resilient when it can function and sustain critical systems under stress; adapt to changes in the physical, social, and economic environment; and be self-reliant if external resources are limited or cut off.” (Frankenberger, Mueller, Spangler & Alexander, 2013).

Bonding, bridging and linking capital are the people centred resources utilized for enhancing resilience both at household and community level. Bonding social capital is between and among the groups and community members. Bridging social capital is a resource of relationship connects one community with other community or one group with other groups, which are dissimilar in social financial and demographic feature. Linking social capital is a relationship created between community members and the persons or institution in power and position to mobilize resource in times of needs and emergencies (Aldrich, 2012; Cutter et al., 2008).

2. Social Capital from theoretical perspective

More than a century ago social capital was first defined as good will, fellowship, mutual sympathy between and among groups, individuals and communities (Hanifan, 1916). Many disciplines have found the value and importance of social capital and show that the involvement and participation in-group activities produce positive consequences between and among individuals, groups and community members (Adler & Kwon, 2002, Portes, 1998). Social capital is used to describe relational resources embedded in personal ties are useful in the development of individuals, communities and groups (Tsai & Ghoshal, 1998). Burt's (1992) defined social capital as “friends, colleagues, and more general contacts through which you receive opportunities to use your financial and human capital” (p. 9). Woolcock's (1998) defined it as “the information, trust and norms of reciprocity inherent in one's social network” (p.153). Social capital is an ability of people that facilitate the members, groups and community to work together for common purposes (Fukuyama, 1995) with the direction of social norms, shared values and reciprocity among them (ibid). The social scientists (Bourdieu 1986; Coleman 1988; Putnam 1993, 1995), have defined it as social network that connect individuals to families, groups and with each other either through weak or strong ties. These networks and connections provide reliable data and information, on the trustworthiness of the other group members, and get access to various resources. Aldrich (2012) explains three forms of social capital – bonding, bridging and linking which are separate in identity but closely related to each other. Bonding and bridging social capital are horizontally connected and linking social capital connected vertically between community members and persons in power, position and authority (see figure 1).

Bonding social capital is a network of relationship embedded between and among the groups, community members, families and close friends identified with similar socio-demographic, economic, race and ethnicity and practicing similar norms and values between and among themselves (Aldrich, 2012, Putnam, 2000). The core relationship of bonding lies on trust and reciprocity, collective action and cooperation. Bonding social capital always ready to extend needful support to the disaster affected members in times of emergencies (Frankenberger et al., 2013). Bonding social capital primarily a sense of belongingness

always strive to work together and help each other at any cost and this kind of united response to any hazards or disaster may strengthen the bond of love, care and solidarity for one another and consequently become resilient to any upcoming disasters and hazards in future (Norris & Stevens, 2007; Solnit, 2009). Sometime the sense of closeness with people of same culture, religion, race and ethnicity does not allow building relationship with the people of outside network due to lack of trust and confidence with outsiders (Abrams et al., 2005; Coffé & Geys 2007).

Bridging social capital is a network of People of between different communities identified with diversified culture, socio- economic, demographic and geographic boundaries extend help and support for one another in times of emergencies period. These two different communities allow each other's common resources, assets and infrastructures for common benefit and even have easy access to thrift and credit system as and when required (Aldrich, 2012). Under the bridging relationship, people develop common understanding realizing that the two communities are friends and not foe as far as disasters, climate change and global warming are concerned. These issues addressed jointly in and through exchange of information, ideas, thoughts and best practices (Frankenberger et al., 2013). Two neighbouring communities rely on each other especially extending valuable support in time of disasters and these kind of philanthropic activities give rise to community resilience (Wetterberg 2004). The support of unaffected community is very vital in case of other community massively affected either by manmade or natural disasters immediately before any external support arrives (Frankenberger et al., 2013).

Linking social capital is a vertical connection developed by an individual of a community with the persons in power, position and authority to seek support and resources in times of emergencies. This kind of network is very vital and valuable for socio economic development and resilience building of a family and community at large (Aldrich, 2012).

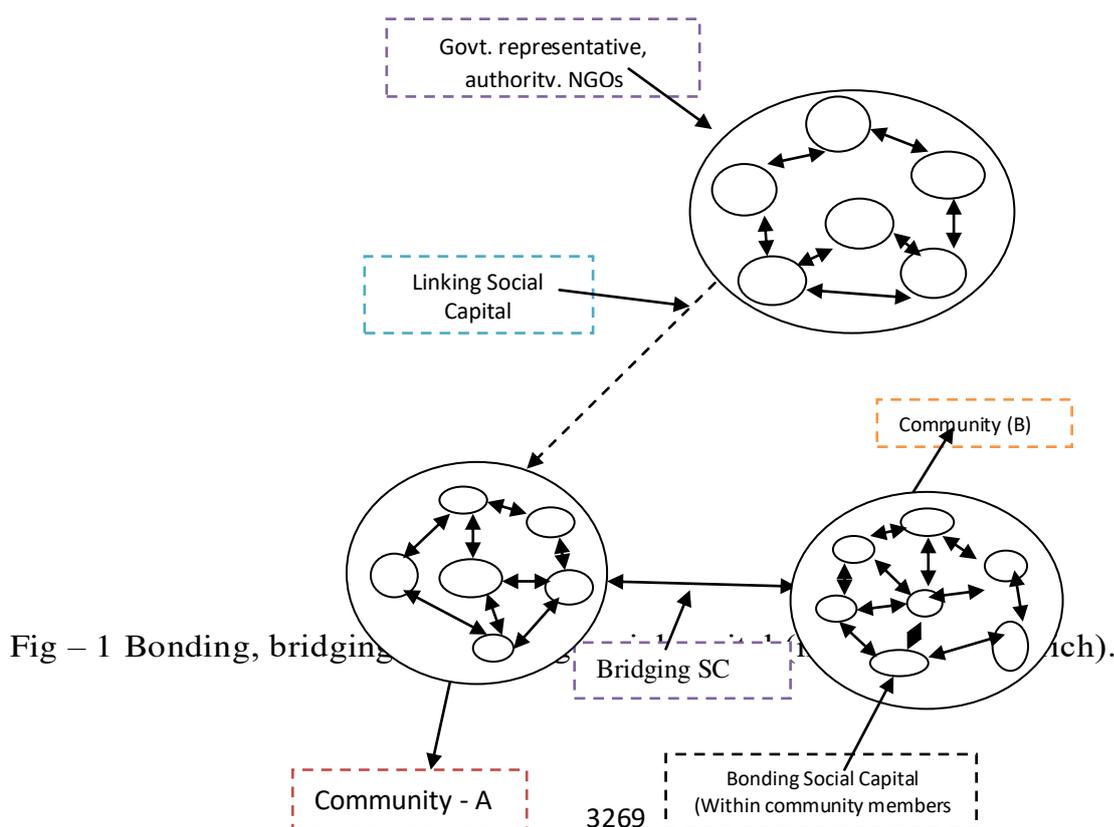


Fig – 1 Bonding, bridging

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Households and communities having three types of social capital are more resilient than having any one or two (Aldrich, 2012; Elliot et al. 2010; Woolcock & Narayan, 2000). Because each type of resource is very much required for extending lifesaving support and help when there is no timely help from outside. The timely help and support extended by bonding, bridging and linking capital to the individuals, groups and communities leads to long term development and resilience building (Frankenberger et al., 2013).

3. Research Methodology:

3.1. Research method:

The researcher primarily engaged qualitative methods of data collection like focused group discussion, key informant interview and observation. Men and women from the different occupation very much affected by disasters like flood and cyclone in the year 2011(great flood), 2013 (cyclone Phailin) and 2019 (cyclone Fani) participated in the data collection process. The researcher also engaged secondary source of data collected from the official records of the panchayat, block and non- government organizations, publications, newspaper articles about the people's response to the disasters. The purpose of qualitative method of data collection was primarily to directly and personally meet the individuals and families affected by the disasters and responded in abundance savings human lives (see, for example, Alam and Collins 2010; Saha 2015; James and Paton 2015). The qualitative methods of data collection tried to avail more and more pertinent data and information in and through in depth interview and interaction with regards how social capital engaged in search, evacuation, saving lives and providing emergency relief and long term recovery to cope with future hazards and disasters (Aldrich 2011a, b; Chamlee-Wright and Storr 2011b).

The research carried out with the outlined methods of data collection with the different stakeholders and groups preferably contributed in disaster relief and recovery process. The first form of data collection was Focused Group Discussion (FGD) carried out for and with the village development committee, village youth association, women self-help groups. A total of 10 to 12 members both men and women between the age group of 22 and above participated in the FGDs. On the other hand the in depth, interview and interaction carried out with the 3 men and 3 women of each village and mostly affected by the disasters, one each PRI functionaries, NGO and INGO staff, volunteer, emergency officers at the block, district and state level.

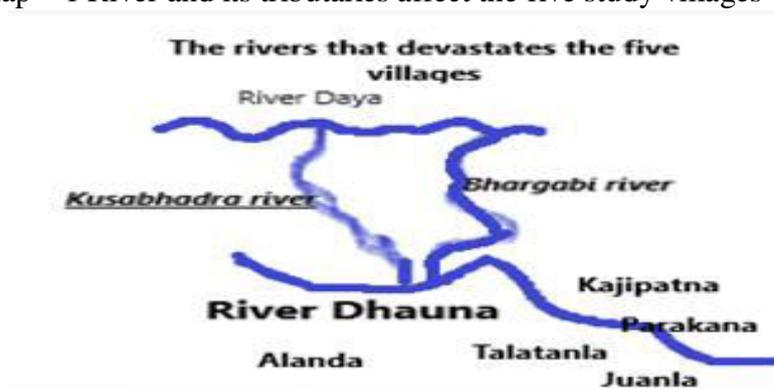
3.2. Study Area and disasters:

The study conducted in the five villages of Alanda gram panchyats from Nimapara block of Puri district, Odisha state, India. According to 2011 census, the total household and population in Alanda is 355 and 1832 respectively. The total household in Juanla is 116 and 512 population, the total household in Kushikona is 204 and 986 is the total population, the total household in Talatanla is 122 and the total population is 481. On the other hand, the total household in Kajipatna is 214 and the total population coverage is 811. In regards to primary occupation of the people, more than 75% families depend on agricultural activities as source of their livelihood and the rest 25% people are share cropper, daily labourers, private and govt. service holders.

The state of Odisha has a coastline of 485 km long called coastal Odisha. The region is surrounded by lower Ganges (Ganga) plain to the north, Bay of Bengal to the east, the Indian Ocean to the south and the Eastern Ghats in the west. The 485 km long of coastline of Odisha exposes the State to flood, cyclones and storm surges. Heavy rainfall during monsoon causes floods in the rivers. Flow of water from neighbouring States of Jharkhand and Chattisgarh also contributes to flooding. The rivers and its tributaries flow with heavy current of water due to poor drainage, high degree of siltation of the rivers, soil erosion, breaching of the river embankment and spilling of floodwater outside the rivers cause severe flood in the river basin and delta areas. The biggest river of Odisha called Mahanadi and other rivers such as Subarnarekha, Brahmani, Baitarani, Rushikulya, Vansadhara and their many tributaries and branches flowing through the State expose vast areas to flood.

The study region such as Puri, Nimapara and the five villages in particular very much exposed to cyclone, storm surge and flood due to Bay of Bengal to its close vicinity and the rivers that make the region prone to disasters. Apart from the cyclonic storm that the region has been facing recurrently, the flood is also another event that devastates lives and livelihood of the people. Fortunately or unfortunately the study villages do flow with one main river i.e. the River Daya and it has two main tributaries such as Kusabhadra and Bhargabi (See in the map – 1). Further, these two rivers merge in one point and create another river i.e. the River Dhanua. People of these regions say that the river Dhanua is not a boon but a bane as this river does not have river embankment as a result in case of heavy flow of water in the river Daya due to heavy flow of water in the upper catchment areas, the river Dhanua make misery to the people. As the river does not have embankment, during monsoon in case of flood, thousands of acres of standing crops and growing vegetable damaged making the people resource poor.

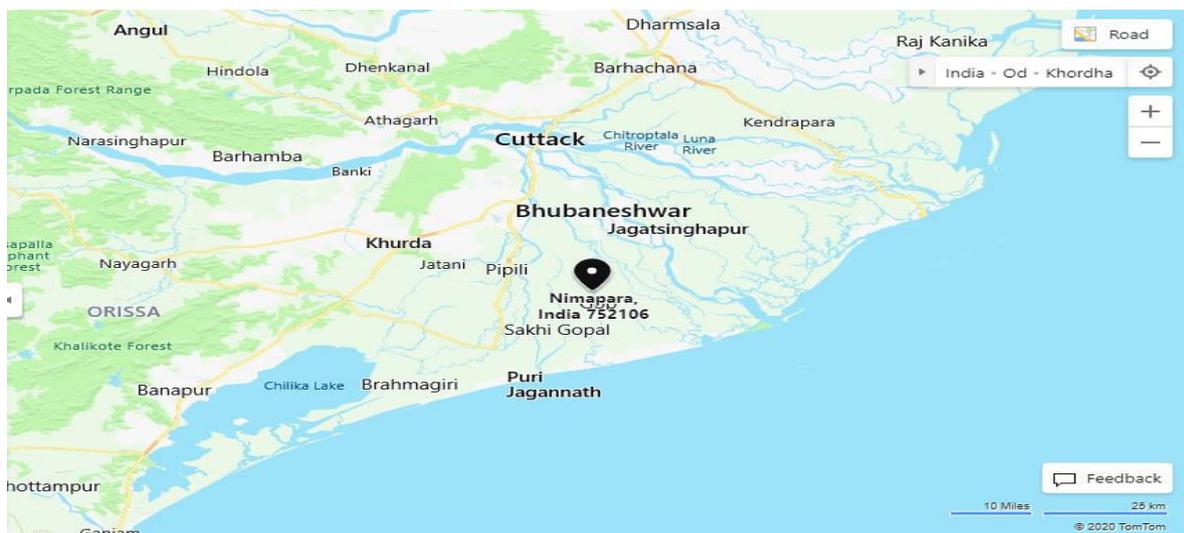
Map – 1 River and its tributaries affect the five study villages



India and its coastal regions witness recurrent disasters since more than two decades. Looking at the history of disasters last 30 years, the people witnessed one of the most devastating cyclones in 29th October 1999. Although many cyclones India faced but it was, really in superlative degree so far as enormity & ferocity is concerned. It devastated 14 districts, 128 blocks, 2399 gps, and 17993 villages. 1.89 crore people were severely affected,

about 10000 innocent people were killed and 4.45 lakhs livestock got perished and most importantly the entire environment was polluted and degraded and people forced to live in the most polluted environment. The great flood in 2011 devastated 27 districts and more than 67 lakhs people severely affected with standing crops and vegetation of millions of rupees fell flat and destroyed. Cyclone Phailin in 2013 claimed 45 people and thousands of people become homeless. Similarly the cyclone Hudhud in 2014, Titili in October 2018), the cyclone Fani in May 2019, Bulbul in 2019 & the super cyclonic storm Amphan and followed by flood in 2020 devastated the socio - economic backbone of the people and truly people will take years to restore, rebuild and come back to normalcy. Therefore, it becomes necessary for the researcher to carry out an investigation into the situation and to ask pertinent questions: How did the people survive before receiving outside help? What role is Social Capital playing in disaster recovery and preparedness measures in these localities? What are the benefits of bonding, bridging and linking social capital that disaster affected individuals and families in the communities received?

Map 2. Map of Odisha cyclone Fani 2019 affected area in Nimapara, Puri, Odisha, India). Refer. – 2019 @Google Map



4. Social Capital and post disaster response and recovery:

The empirical findings of the study revealed that the affected community members received lifesaving help and support from bonding, bridging and linking social capital in pre, during and post disaster situation. The affected people of the flood and cyclones addressed with their basic needs and requirement that saved their lives and mitigated their day today needs and requirement. Among the bonding, bridging and linking social capital, bonding and bridging have helped the people in need to a great extent, whereas linking social capital has the least contribution proving relief, response and recovery of the disaster victims.

4.1. Bonding social capital in disaster risk reduction and resilience building:

Bonding social capital refers to relationship between and among the families, groups and communities emotionally attached to one another within the same locality having common identities, culture and ethnicity (Adler & Kwon, 2002). Communities with similar relation produce more bonding social capital but less bridging and linking social capital at societal and institutional levels (Lin, 2001). Dynes (2006) stated taking the data from the research,

that healthy relationship in families, groups and in the communities positively affects survival rates in disasters. Dynes (2006) gave an example stating in the post-earthquake in 1980, individuals living alone were 2.4 times more likely to die waiting for outside rescues than those who lived with other people nearby.

The researcher has built up a strong body of evidence about the role of social capital in disaster risk reduction and resilience building in all the five study villages. The cyclone Fani 2019 followed by the biggest pandemic called COVID - 19 devastated the lives and livelihood of the people. The cyclone Fani destroyed infrastructure, household assets, food grain, seeds preserved and income assets. In one hand, people intend to go out and work hard to survive and on the other hand, the deadliest coronavirus never allowed people to come out of their house for safeguarding life. At this critical juncture, the only hope of these affected people is bonding social capital that played lifesaving role by providing food, water and shelter and even partial financial support with which some constructed temporary houses for survivability with dignity and minimum security. Immediately after cyclone warning received, the relatives, neighbors, kith and kin carried the most vulnerable people like old, sick, pregnant women and differently abled to the nearby cyclone shelter, school premise and as many as 95 affected families were sheltered in the neighbors' and relatives houses for at least three days (see chart number - 1). Bonding social capital at this turmoil period acted like glue that keep the affected families, members and individuals neighbours together giving them hope in despair moment facilitating all kinds of basic requirement, help and support (Norris, Stevens, Pfefferbaum, Wyche, 2008). A case of a widow and homeless narrated below. (Data sources FGD meeting and personal interview)

Parbati Behera is a widow one of the inhabitants of Talatanla village. She had a small thatched house where she and her grown up daughter lived. Immediately after receiving cyclone warning, they got ready with some basic dry food like flatten rice, jaggery, drinking water, candle matchbox and mosquito coil etc. Since the village does not have any cyclone shelter or any concrete school building nearby so they stayed at home. When the wind speed was gradually higher one of the neighbours Mr. Mahendra with so much of courage went to their house and brought them to his house. Fortunately, they saved themselves but their house got completely damaged and all other assets and food grains as well. Responding to the researcher's queries, Parbati expressed her anguish "My house and every valuable inside the house got completely damaged, I am thankful to our neighbour Mr. Mahendra and his family who sheltered us for 7 months and provided food, water and other basic requirements until we reconstructed our house." When Mahendra was asked on what made you to shelter this family for long seven months? with curiosity, he replied to the researcher "I sheltered this widow and her daughter in my home as she was homeless and she has no one to be taken care. I did my best from a humanitarian point of view." "I am happy that with great difficulty they have made small house and expecting the government to provide a concrete house for their safety, security and sustainability".

Bonding among the community members enables people to help each other in the times of need (Adger, 2010). The nearest kin members not only supported each other in evacuation, they also provided the affected people with food, water and other essential, which helped them to survive (especially in the villages of Chingudiakanta and Juanla as discussed in FGDs). According to Adger (2010), social capital is a living instrument for the groups and community members that facilitated rendering essential services and resource for the affected families. Some respondents of FGDs from five villages reiterated that out of about 275 houses fully damaged 11 most resource poor families raised temporary houses with the contribution and support of their relatives and village volunteers (See chart number- 1). Disaster preparedness activities such as early warning, stockpiling, first aid and mock drill on search and rescue activities considered as capacity and strength that people have developed with the efforts of local non – government organizations. These kinds of preparedness activities practiced by the communities will have less destructive effect on them (Mathbor, 2007, Jordan, 2015 and Islam and Walkerden, 2014). Communities with bitter experiences have had faced such disasters are better prepared in all aspects of life with the facilitation of bonding social capital. The emotional attachment of one family with another, groups and community members enables to motivate everyone to take preventive and proactive measures on the wake of disasters (Dynes, 2006). After a couple of months of the cyclone, COVID – 19 the deadliest coronavirus disease spread everywhere like a fire. Bonding social capital with updated skills and information, ensured to maintain social distance, wear mask and use sanitizer as and when required. Bonding social capital formed a safety committee at Alanda and Kajipatna that act as a vigil compelling people to maintain appropriate preventive and controlling measures expressed by the FGD members in these two villages. The respondents from Alanda reiterated case that despite of prior information on the ferocity of the cyclone Fani, one man called Ekalabya remained inside his mud house to safeguard the livestock and other household properties and faced the disastrous consequences just before the landfall of the cyclone. The researcher shared the case below.

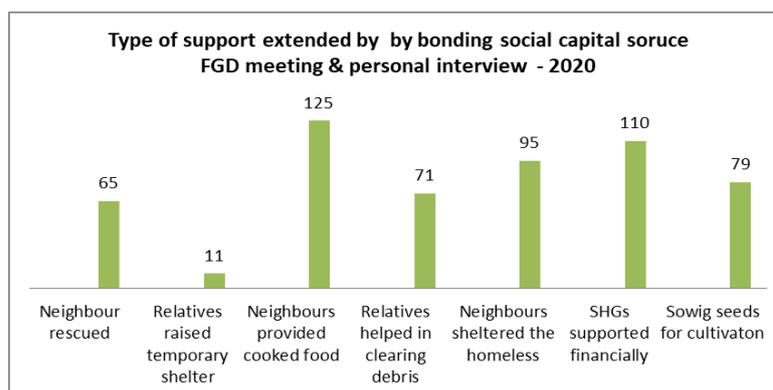
Mr. Ekalabya the resident of Alanda village evacuated his elderly parents and his wife and children to the nearby cyclone shelter immediately after cyclonic warning. He also placed the cows and other livestock in a safe place. He thought of himself that nothing would happen to him and his house so he stayed inside the house to guard the household properties, food grain and paddy seeds. Gradually the wind speed increased and roaring like sea wave and his parents, wife and children at the cyclone shelter started crying for help to rescue him. Mr. Ekalabya was helpless as he neither could stay inside the house nor could move out, as the wind speed was more than 150 km. per hour. Luckily two of his friends rushed to him and rescued before the real landfall of the cyclonic storm. When asked him about his experience of the cyclone he says, “I witnessed the 1999 super cyclone, the wind speed was more than 220 km per hour and all of us were inside the same mud house and survived without any losses. But the cyclone Fani with less than 200 km of wind speed devastated our two houses” He

goes on to say, “I thank God and my two friends who saved me at the point dire consequence. “I should not take nature’s fury for granted nor to give top priorities to wealth and properties at the cost of my life.”

Padisahi one of the clusters under Alanda village affected severely by the disaster and left 25 families homeless. These family members resided temporarily in the Alanda cyclone shelter for 60 days. The relative and friends families could provide food only for 3 days; however, the local government could provide them cooked food for 60 days. The 23 Women Self Help Groups in all the five villages played a commendable role by helping 110 women members financially to meet the day today necessities with minimum rate of interest, the data found while meeting with Women Self Help Groups from five villages.

Youth club members from Alanda village erected the fallen electric pole; straighten the electric wire (aftermath of the cyclone Fani 2019), data and information gathered through FGD along with the task force members of Alanda. Since the 100 % mud housed damaged completely, there are many families who were unable to clear debris due to lack able workers and at this woeful situation, as many as 95 relatives and neighbouring families in five villages assisted in cleaning and clearing debris that helped them to rebuild their houses. Normally more than 80% people’s primary source of income is agricultural work they undertake during monsoon and summer crops like paddy, vegetable, pulses etc. The farming families who preserved inside the mud house were totally damaged and nothing could recover. When asked on how did they get seeds for sowing? The quick reply from the respondents is their neighbours, relatives and friends who borrowed them when they were in empty hands. As per the primary source of data about 79 families borrowed paddy seeds, black gram, and green gram for cultivation. This kind of gesture has led these farming families into a sustainable livelihood practices, (See the chart number – 1)

Fig – 2 presents a summary of findings from focus group discussion among participants on the types of support extended by bonding social capital.



4.2. Bridging social capital in disaster recovery and mitigation measures:

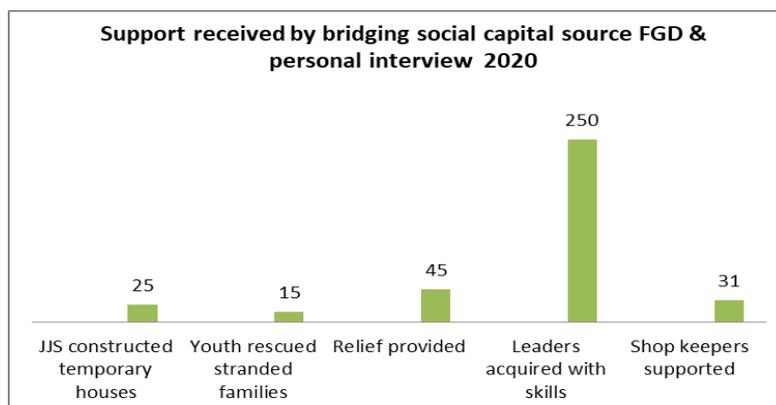
Bridging social capital is when people, groups and community members develop relationship between and among the different groups, community, associations, educational institutions, non – government organizations with different entity, ideology and socio – economic and environmental variation (UN-ISDR, 2011). When the relatives and neighbours from different communities extend their support to mitigate the survival need of the affected people is called bridging capital. The role of non- government organizations and

other institutions as bridging capital play vital role in pre and post disaster situations. COVID – 19 has been the biggest pandemic that the people of every corner affected directly or indirectly. The local non – governmental organizations have capacitated as many as 250 men, women and youth on the COVID – 19 protocols along with preventive and controlling measures of coronavirus. Safety committee formed in Alanda and Kajipatna as said by the FGD member to ensure people to maintain social distances, wear mask and use sanitizer every time exposed to the outer world. This kind of practices minimized the spread of coronavirus further. While interacting with the cyclone affected people at Padisahi (one of the clusters of Alanda village) on whether any non- government organizations reached to you with any support? Answering to the queries of the researcher Mrs. Kabit Bhoi and Nayona Bhoi from Padisahi narrate a case below

Mrs. Kabita and Nayona are two active women and the leaders of women Self Help Group express “Every time when disasters hits the communities with substantial damages recorded, Mr. Nakul Nayak the secretary Jageswari Jubak Sangh a local based non – government organization from Nimapara reached Padisahi immediately with good amount of relief materials to meet the survival need. The cyclone Fani destroyed everything and made us to start from the scratch again, which has been the most difficult task to achieve to come back to normalcy. Luckily Mr. Nakul Nayak reached to our doorstep again with sufficient relief materials including food and non – materials for life for 25 families. Above all the organization constructed 25 temporary houses @Rs. 35000 for per family, this was for us the most valuable support ever received. We remain grateful to the organization for being with us in times of the most crucial period uplifting us from the clutches of poverty”.

While interacting with the respondents in the focused group discussion at Juanla, some of the respondents recalled the benevolent work that the two volunteers from Parakana the neighbouring village rescued 15 elderly persons stranded in the areas marooned with water at Juanla. These youth with the temporary boat made of banana trunk passing through marooned water, rescued those 15 people, and placed them in a safer place. Apart from this help, some of the families from the same locality distributed dry food to 45 families of Juanla and Chingudiakanta. The cyclone Fani also destroyed 15 petty shops of the poor families who survived with the income gained from these shops. The local big shopkeepers at Khelar and Nimapara who used to provide groceries to these petty shopkeepers on regular basis have provided required stationeries and groceries on credit and assured them not to worry about the payment. This kind of help by the big shopkeepers gradually made them self-sufficient without further exposure to exploitation and indebtedness. Many families through discussion with FGDs reported that about 16 poor families from these villages have had no money could purchase foodstuff such as edible oil, cereal, biscuits, sugar, tea powder and other groceries on credit from the nearby shops, data gathered from the personal interview with the affected people. The chart no two indicates the types of support the communities received due to bridging social capital.

Fig - 3 the types of supports extended by bridging social capital, sources FGD meeting and personal interview – 2020.



4.3. Linking Social Capital in disaster recovery and preparedness measures:

“Linking capital concerns the relationship with formal authorities and institution vertically”. “These vertical ladders viewed to be power and positions as per the power, wealth and social status” (Keeley, 2007 p102). Linking social capital is a relationship between the communities, and with those in power and position to allocate resources for the wellbeing of the people in the communities (Small, 2010). The state government under the leadership of Odisha State Disaster Management Authority (OSDMA) carried out early warning after getting cyclonic warning information from the state, national and international meteorological department, informed to every community about the scheduled landfall of the cyclone, and simultaneously began evacuation drive led by Odisha Disaster Rapid Action Force (ODRAF). As many as 75 most vulnerable people like pregnant women, children, elderly men and women, differently abled and people suffered from chronic diseases resided in the isolated area rescued and evacuated them to the nearby cyclone shelter and school buildings. Looking at the immediate need of the people, government provided one bag of rice containing 50 kgs. and Rs. 2000 cash to each and every family in all the 5 villages. As part of reconstruction measures, the state government could so far construct only 14 cyclone proof houses under the schemes of Indira Awas and Biju Paka House yajana, the data gathered from the respondents while FGD and personal interview. The chart no three indicates types of support extended by linking social capital.

Fig - 4 the types of support extended by linking social capital, sources FGD meeting and personal interview – 2020.

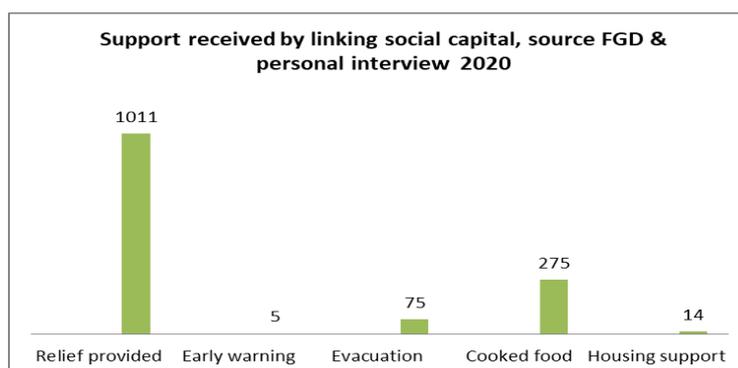
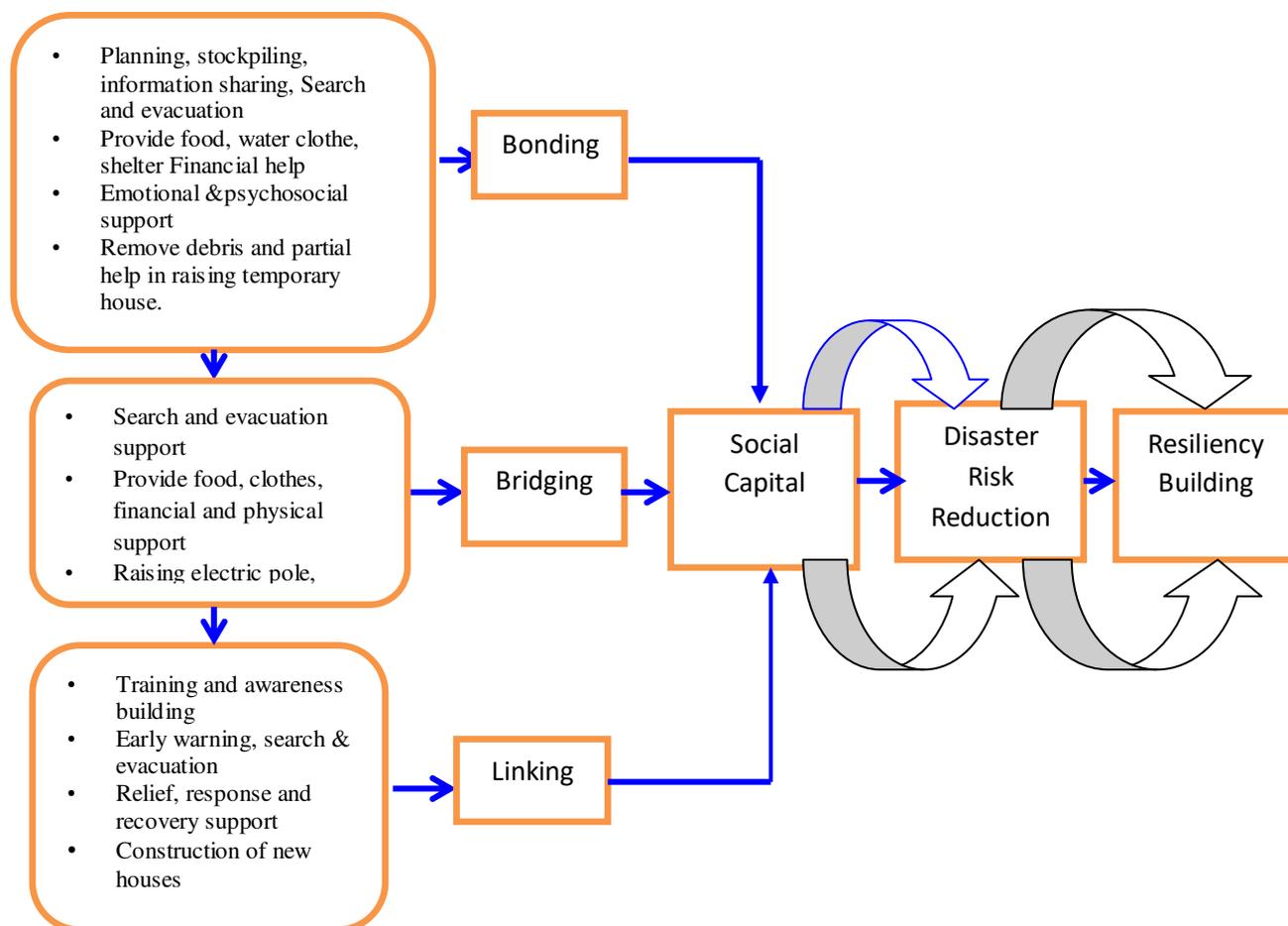


Figure – 5: Contribution of Social capital in disaster risk reduction and resilience building at a glance (compiled using empirical evidences)



5. Discussion

Social capital is part of human society either in rural or urban setting invites to live in unity and harmony. Human being by nature tends to live in-group and resolve issues and challenges in reciprocity. Social capital enables individuals, groups and community members to enter into someone's problems with an intention to resolve and expects the similar action in his or her turmoil situation. Social capital is a human network where interpersonal relationship is a base for strengthening the bond of love for one another, which motivates a person to stand strong and assist others in times of natural or human made hazards and disasters. The bond of love for one another is a greater strength on which disaster resilience achieved. This research paper shows how different forms of social capital like bonding, bridging and linking capital play vital role in pre, during and post disaster situation and facilitated lifesaving response and recovery measures. This kind of positive results derived are also similar to the results acknowledged by Aldrich (2008), Hawkins and Maurer (2010), LaLone (2012), Messias et al. (2012), Aldrich and Meyer (2015), Islam and Walkerden (2014, 2015).

Lin (2001) suggests that the contribution of bonding social capital to its neighbour, relatives and friends is minimal. However the research findings suggest that although the materials values of bonding social capital for the affected people is smaller in quantity but the most precious of all is mental and emotional support they received and felt confident that they are not left alone but surrounded by the neighbours, relatives and friends to do a bit for them. These sorts of practices enable people to be resilient to future hazards and disasters.

As a whole, both the affected and non – affected people responded to the disaster caused by the cyclone Fani. The first responders in the form bonding social capital are the neighbours, relatives and friends who gave hope to hapless with a mental and psychological support, food and water to hungry and lifesaving support of rescue and evacuation to the most vulnerable families in the communities. Bridging social capital also did its bit separately but complemented to its goal of saving and protecting human lives from disastrous situation. This kind of result is sustainable for and with Mathbor (2007), Jordan (2015) and Islam and Walkerden (2014) as the bonding and bridging capital hugely supported for the sustainable livelihood of the farming families and supported them to lessen the adverse impact of disasters. The core value of such extension of benevolent approach is good relation, trust, reciprocity, collective action, and cooperation between and among the people in the communities. But the empirical evidence show that some time the good relations among the members become negative and competitive when an individual in the group avail extra relief or rehabilitation support due to his or her network with higher authorities.

The research found out that the villagers of Juanla and Chingudiakanta have developed better network and constructive relationship with the neighbouring villages. On the other hand, the villagers of Alanda, Kajipatna and Talatanla confined their reciprocity among themselves alone. Disaster like Fani is such natural event that cannot be responded in isolation but require the maximum support of bridging and linking capital to enhance resiliency to future hazards and disasters (see, for example, Putnam 1995; Nakagawa and Shaw 2004; Murphy 2007).

Every act of response and recovery program under taken by bonding, bridging and linking capital on the wake of disaster was not only to save lives but above all to help them to stand strong and helped this experiences to manage stressors and shocks better in future. Therefore every efforts needs to be taken by government and non – government organizations to organize communities into formal and informal groups that can act like glue keeping the folk together not only in pre disaster but mostly during and after emergency situation. It is evident from the research that bonding social capital has appeared like blessing in disguise meeting and accessing basic needs and requirement in the absence of which life could have been painful and awful.

In this research, contribution of linking social capital for socio – economic rehabilitation and restoration are not vast in quantity and quality except a few relief and rescue measures and the infrastructural rehabilitation for the homeless families like a drop in a glass of water. The results from the FGD meeting and from the personal interview show that the community members in-group and individually are not empowered to tap resources

from linking capital. There needs to be regular interface meeting and workshop between the linking and bonding capital to exchange and share the problems, issues and challenges to address by linking capital. The state and national government as per the disaster management act entrusted to play crucial role in managing disasters in pre, during and post disasters situation. The history of disasters reiterates that people themselves are the first stakeholders to prepare for, respond to and recovery from the destructive effect and impact of disasters. The support services from government institutions came late and the individuals realized that the resource distribution was not socially equitable.

6. Conclusion

To explore the role of social capital that is, bonding, bridging and linking in response, recovery and adapt with coping mechanism from the cyclone Fani was the purpose of this research. The cyclone left with no physical resources for the people to reduce life risk by themselves than to depend largely on neighbours' help and support that is social capital. Beginning from the act of search evacuation of the most vulnerable families and individuals to the safer places, fed the hungers, sheltered the homeless, cleared the debris, raised the temporary shelters and toiled on the long term recovery and rebuilding the affected members in communities for sustainable livelihood and resilience building. Some authors have opined that these acts of benevolence of social capital for those disaster-affected people are tiny and yet without those help the affected people are difficult to lifted from the gutter of disaster.

One of the strength in the five villages are the community level informal groups like Village Development Committee, Women Self Help Groups, Farmers Clubs, Youth Club and the Task force committee. These groups have developed the sense of we feelings, care for one another in times of difficult situation and these groups have played lifesaving work during and after disaster. When asked some of the members of farmers club on the purpose of forming this group, Mr. Manas Parida the secretary from Alanda replied, "We have realized since a long back that the only survival strategy for us in this disaster prone village is group". "We depend on each other on sharing of information, sharing of seeds, sharing of fertilizers and borrow money in times of difficult situation." The only concern of these farmers is not able to connect with the concern department and the persons in power and position for mobilizing required support and resources.

The effective reduction of vulnerabilities and enhancing capacities require appropriate, realistic and functional planning and coordination that need to create by the government organization. Some government and non-government organization along with the participation of all community members need to enhance the capacity of all the community members. Moreover there are other factors other than social capital that determine timely and effective response and recovery work from the adverse impact of disaster. Every community has formal and informal groups or committee, led by the leaders. These leaders with their leadership skills and expertise mobilize human, physical and financial resources and meet emergency needs of the affected people. Some participants in FGDs reiterated that the leaders in the SHGs, youth clubs and farmers clubs have played pivotal role in managing risk and crisis effectively. The implementation of search, evacuation, relief and response work was

possible with collective action, cooperation and coordination led by the leaders in the communities. Leaders must be upgraded with the managerial skills and techniques time to time so as to effectively coordinate the entire cycle of disaster management and make the communities resilient to absorb shocks and stressors in the wake of future disasters.

Abbreviation

COVID – 19	: Corona Virus Disease - 19
NGO	: Non – Government Organization
INGO	: International Non-Government Organization
FGD	: Focus Group Discussion
SHGs	: Women Self Help Groups
IAY	: Indira Awas Yajna
VDC	: Village Development Committee
ODRAF	: Odisha Disaster Rapid Action Force
NDRF	: National Disaster Response Force
OSDMA	: Odisha State Disaster Management Authority
BDO	: Block Development Officer
PRI	: Panchyati Raj Institution

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