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Livelihood Analysis of the Char Dwellers Using Capital Asset Framework

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Abstract

The study has been carried out in a Riverine Island of the Ganges River in Chapai Nawabganj District of Bangladesh to evaluate the livelihood status and the association between different livelihood capitals and well-being status. Both qualitative and quantitative data are collected through household questionnaire survey and field observation. Most of the surveyed households are found either poor or hard core poor. This study identified five capitals of livelihood i.e. human, social, natural, financial and physical capitals with specific indicators. Family size and education indicators of human capital, organizational attachment of social capital, total and operational land of natural capital, value of livestock, size of savings and loan of financial capital and mobile phone of physical capital are statistically significant with the well-being status. This means higher value of indicators indicate higher the well-being status. Hence, this study assumes that most of the char dwellers are poor or hard core poor because their livelihood capitals and assets are not in satisfactory level. This study suggests providing necessary institutional and organizational supports for strengthening the livelihood of char dwellers.

Key words: Food security, Livelihood capital, Riverine island, Well-being status

Introduction

Bangladesh is a Riverine country and the largest delta of the world (Islam and Rashid, 2011). The natural setting of this country is between the Himalayas and the Bay of Bengal together with the prevalence of tropical monsoon climate (Rana and Nessa, 2017). The country is considered as the mercy of three major rivers i.e. the Ganges, the Bramaputra and the Meghna, altogether called as GBM basins (Bormudoi *et al*., 2011). The basins stretch over five countries like China, Nepal, India, Bhutan and Bangladesh (Mondal, 2011). They constitute about 1.65 million km^2 catchment area of which only 7.5 % lies within the territory of Bangladesh (Sarker *et al*., 2003).

Bangladesh is a country prone to flood and river bank erosion and natural disasters in the world (Lein, 2000; Siddik *et al*., 2018). The major rivers, GBM, carry huge volume of water every year in the country. In addition to that, they also carry about 1.1 billion tons of sediment per year (EGIS, 2000; Sarker *et al*., 2003). These two facets considered as the agents of flooding and river bank erosion in this well-known Riverine country (Elahi, 1991). The river inflow and rainfall contributes to the annual inundation of large areas of the country during the monsoon. In the active flood plains, the main rivers are constantly changing courses, leading to both riverbank erosion and accretion of new land (Haque and Zaman, 1989; Lein, 2000). The rivers not only erode land and causing settlements to be frequently on the move, but also throw up new virgin lands through accretion for newer settlements and agricultural activity (Baqee, 1997). These newly formed lands are called char in Bengali language. It comprises about 6.5 million populations in Bangladesh and constitutes almost five % of the total land area of the country which is about 7.2 thousand km^2. (EGIS, 2000; Islam *et al*., 2006). These accreted lands are used by the people of both banks as their new settlement edges (Zaman, 1988; Baqee, 1993; 1998; Schmuck, 2001). In one hand, the char landscapes are of great importance for its exceptional hydro-geological settings (Sarker, 2008). On the other hand, the physical characteristics and spatial location as well as the river morphology and the monsoon climate render the char lands highly vulnerable to natural disasters (Baqee, 1986; 1998). Especially, livelihood of the char dwellers is at great threat because of flooding created by the consequent deposition of sediments on the river bed as well as river bank erosion. They create enormous impacts on livelihood of char people by damaging and/or destroying houses, crops and reducing family income (Baqee, 1998; Islam and Rashid, 2011; Siddik *et al*., 2017).

Bangladesh is ranked as 147^{th} on the Human Development Index. About 63 million people of this country live below the extreme poverty line (UNDP,

2017). The country also ranked as 67th (out of 84 countries) on the Global Hunger Index with a rating of 24.7 and the score is considered as alarming by the indexôs developers (Barun *et al*., 2009). It is already mentioned that about 6.5 million people live in char areas and their well-being status is not well compared to other parts of the country (EGIS, 2000; Islam *et al*., 2006). The northwest area of Bangladesh is the entry point of many rivers coming from the Himalayan ranges. The Ganges-Padma is one of the potential rivers of the country which formed char lands in the river channels (Baqee, 1998; Sarker, 2008). It is a meandering river and highly affected by river bank erosion and accretion in the channel (Islam and Islam, 1985; Baqee, 1993; 1998; Sarker, 2008). The char areas of the Ganges-Padma River are undergoing quick hydro morphological changes due to natural and anthropogenic causes (Hofer, 2006).

A number of studies e.g. Adnan and Monsoor (1976); Elahi (1987, 1989, 1991); Ali (1980); Baqee (1993; 1997); Hasan *et al*. (1999); Mamun and Amin (1999); Rahman and Davis (2005); Islam *et al*. (2006); Kabir (2006); Paul (2006); Mondal (2008); Bayes and Hossain (2009); Saifullah (2010); Rahman and Rahman (2011, 2012); Uddin and Rahman (2011); Islam (2012); Uddin and Basak (2012); Karim (2014); Mollah and Ferdaush (2015) and Rana and Nessa (2017) have been conducted their studies on marginal peopleôs livelihood and mostly on char dwellers in different parts of the country. But, the authors couldnôt found any research on the drastic char area of the Ganges-Padma River, particularly on the association between wellbeing status and livelihood. Hence, this study aims to assess the existing livelihood status of the char dwellers of Chapai Nawabganj District and examine the association between well-being status and different capitals of livelihood.

Methodology

Study area

Char Laxmipur of the Ganges River was purposively selected as the study area which comprises of 4, 5 and 6 number wards of Panka Union (lowest administrative unit of local government) under Shibganj Upazila (sub district) of Chapai Nawabganj District (Fig. 1). There are total 296 households in this char area (UISC, 2017).

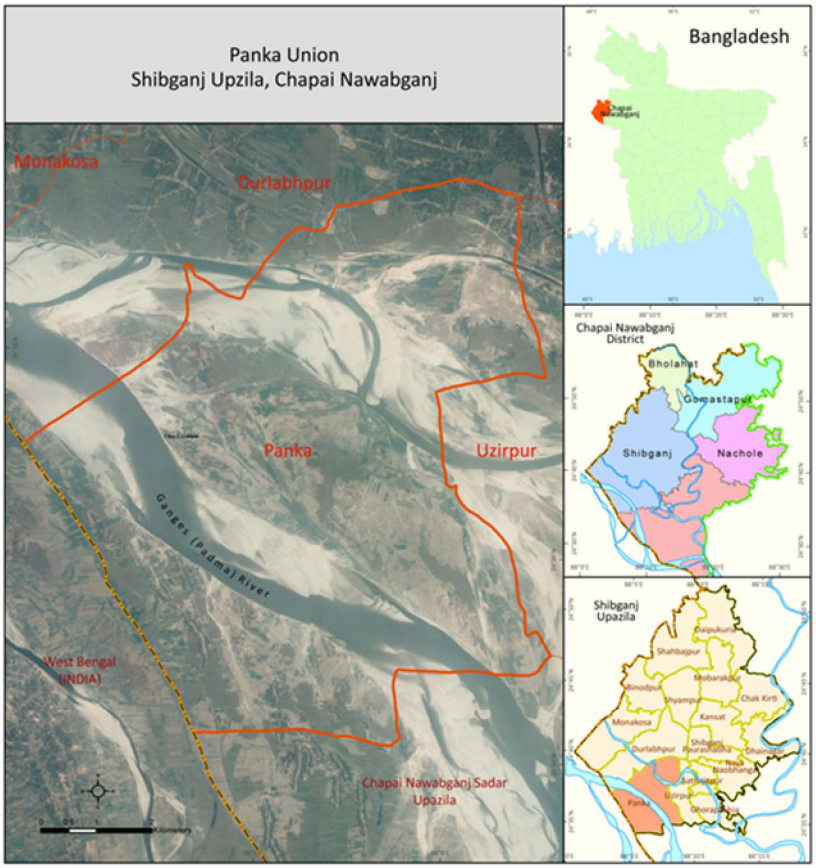

Fig. 1. Map showing the study area

Data collection and process

Both quantitative and qualitative data were collected. Sample survey method was used to collect the primary data from the respective households. The main data collection techniques were direct observation and semi-structured questionnaire survey. Direct observation was done through transect walks. During transect walks, the researchers kept the objectives of the livelihoods study in mind. The dwellers took the opportunity to discuss their commonly felt problems and sought solutions with the researchers. The observation results were used in order to cross-checking the respondentsô answers during questionnaire survey. After completing direct observation, the semi-structured questionnaire survey was conducted with household representatives (both male and female) by means of face-to-face conversation. Due to time constraints and financial limitation, a total of 108 were chosen for conducting questionnaire survey from total 296 households by 93 % confidence level where the error was 7 % with a 50 % response distribution. After that, a simple random sampling method was employed in order to carry out the survey in these sampled households. After inputting data into SPSS platform, if there were any items left out or any contradictory answers were found, then the respondents were revisited to obtain the missing and/or correct information. Secondary data is collected from published and unpublished documents. All the quantitative data was processed and analysed using SPSS Windows 20.0. Data was mostly presented in tabular and graphical form. The association between well-being status and livelihood was assessed using Gamma and Lambda analysis.

Definition of well-being status

The households were categorized as better off, middle class, poor and hard core poor (Table 1) based on daily income and food security (World Bank, 2004).

Table 1. Definition of well-Being status of the households based on World Bank, 2004

Category	Per Capita Income (USD)	Food Security (Daily)
Better off	> 4.0	Three meals
Middle class	2.0-4.0	Three meals or less (seasonally food insecure)
Poor	1.0-2.0	Two meals or less (moderately food insecure all the year round)
Hard core poor	<1.0	One meal or above (completely food insecure)

Source: Paul, 2006

Capital asset framework (CAF)

The level of economic status is a key indicator to assess the livelihood. Only a few successes have been achieved in eradicating rural poverty, although new ideas are developing and new approaches to rural development are being deliberated (Carney, 1998). Department for International Development (DFID) has been implemented a sustainable livelihood framework for reducing poverty since 1997. It is a crucial achieving the outcome of livelihood status using different assets and strategies. The framework is widely used in contemporary studies which not only for poverty eradication but also for socio-economic development and sustainable management of natural resources. Based on the assets (human, social, natural, financial and physical capital) included in the framework, a (CAF) is formulated for analysing the livelihood status of char dwellers in the study area (Fig. 2).

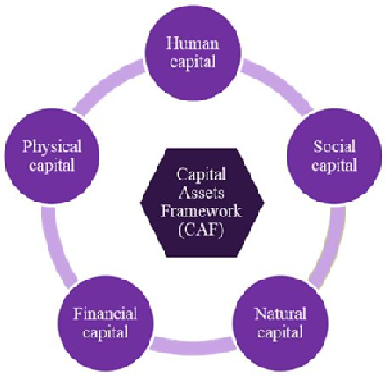

Fig. 2. Capital assets framework (CAF)

Results and Discussion

Well-being status

Well-being status is an important indicator for identifying potential human resources. It is strongly interlinked with the occupation and income distribution and essential in describing livelihood strategy (DFID, 2001; Baumann, 2002). It has been determined based on the definition of daily income and food security set by World Bank (2004). According to the definition, only 4.6 % of the surveyed households are found as middle class, 15.7 % as poor and 79.6 % hard core poor. Surprisingly there has not a single better-off household.

Capital based livelihood status

Human capital

Human capital may be the most important livelihood resource for the char dwellers. It encompasses labour, income capacity and household relation, education status, types of occupation etc. These parameters depend on the internal demographic factors of the family such as gender, age, marital status, family size etc. (Ellis, 2000). However, among the above mentioned determinants family size, earning source, education and number of earning person have purposively been selected to determine human capital in this study. It is found that the average family size is about 6.14, which is comparatively higher than the family size (4.59) at District level (BBS, 2015). The minimum and maximum value is 5 and 9 respectively whereas each family has 1 to 4 economically active family members (Table 2).

Table 2. Status of different human capital (N=108)

Human Capital	*Statistics*	*Result*	*Human Capital*	*Statistics*	*%*
Family size	Mean	6.14	Main earning source	Day labour	62.0
	Median	6.00		Farming	29.6
	Minimum	5.00		Business	7.4
	Maximum	9.00		Service	0.9
	Std. deviation	0.971	Education (maximum education among the family members)	Primary	45.3
Number of earning person	Mean	1.84		Junior secondary	38.0
	Median	2.00		Secondary	13.0
	Minimum	1.00		Higher secondary	3.7
	Maximum	4.00			

This study identified day labour, farming, business and service as the main income source of the surveyed families. Amongst them, day labour includes almost two-thirds of earning sources while business and service together hold a negligible portion (about 8.4 %). Educational status is believed as the important decision making parameter in a family. Among the surveyed households, about half of the familyôs highest level of education is primary education that means one to five classes whereas only 3.7 % familyôs maximum education level is higher secondary (Table 2).

Social capital

Social capital is a broad term includes the norms and networks facilitating combined action for mutual benefits through the exchanges of experience, the sharing of knowledge and cooperation among rural livelihoods. It is now commonly agreed that social capital is crucial for enabling societies to prosper and achieve sustainability. The idea of social capital is closely associated to local institutions and collective effort. In rural and marginal society, conflict with relatives and neighbours is a common scenario which may arise due to unequal distribution of resources, making the opponent injured physically or mentally and some other underlying causes. Such conflict may cause the loss of property and weakening the social bonding. Hence, household with no conflict is may be a good sign for better livelihood status and considered as social capital in this study. The survey revealed that more than half of the respondents do not involved with any conflicts with their neighbours or relatives within last two years. In addition, conflict solving attitude is also considering as social capital. It is revealed that about 46.2 % households showed their interest to solve such conflicts by social discussion (Fig. 3).

Collective effort can save time and money. The char dwellers have carried out a few collective activities i.e. established mosque and village market, re-established school and relocated houses that have frequently been damaged due to river bank erosion. The survey result shows that only 26.9 % of the respondents are directly involved in collective activities (Fig. 3).

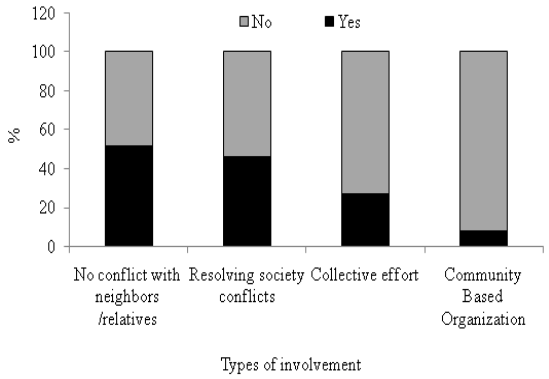

Fig. 3. Status of different social capital

Membership of local organization and/or participation in their different activities can be a good proxy of social capital because these may create opportunity to established network access to the developmental and social services. A few organizations are found in this remote area. However, levels of participation vary according to the well-being status of the household. Only 8.3 % are identified as the member of such organizations (Fig. 3).

Natural capital

Natural capital represents the natural resources such as land, water and biological resources that are utilized to improve livelihood status. It is found during field observation that most of the dwellers have lost their homestead land due to river bank erosion. A huge amount of land is at riverbed. At present, a few amount of land is being used while most is fallow because of unstable char land. As a result, a noteworthy number of households are landless. The char dwellers stated during field observation that adjacent river is considered as the main source of supplying fish for their daily consumption. They opined that fish culture is quiet impossible in their premises or nearby area because most of the area are flooded during flood season.

Table 3. Status of different natural capitals

Amount of land (decimal)	Total land (%)	Operational (agriculture) land (%)
N	108	72
0	33.3	18.1
1-50	47.2	54.2
51-100	7.4	19.4
101-150	5.6	5.6
150+	6.5	2.8

A person holding less than 50 decimals of land is defined as landless in Bangladesh (Abdullah and Murshid, 1986). Table 3 represents that about 33.3 % families do not have any land and they live by taking lease from other dwellers. In addition, 47.2 % households have land ranges between 1-50 decimals. Hence, in total about 80.5 % dwellers have 50 decimals or less land, are called as functionally landless. On an average each household (excluding no land group, N=72) is holding 54.2 decimals land including minimum 8 decimals to maximum 300 decimals. In the context of operational land (N=72), about 18.1 % households do not have any agriculture land. Each household (excluding no operational land group, N=59) is holding average 51.9 decimals land including minimum 5 decimals to maximum 280 decimals.

Financial capital

Capital is the supply of accumulated goods committed to the production to which the household has access (Ellis, 2000). Financial capital facilitates the financing of working capital as well as long-term investment in fixed capital needs. In this study, the value of livestock, size of savings and loan are considered as the financial capital.

It is identified during informal discussion that most of the char dwellers used livestock resources as the recovery assistance after flooding in their area. They sell livestock for buying daily needs as well as cultivating land. They also use livestock for collecting and selling milk. This study explored that about 88.9 % of households have livestock. The average market value of the livestock of each household is about 16,469 BDT including minimum 600 BDT to maximum 86,200 BDT (Table 4).

Table 4. Status of financial asset in BDT (Bangladeshi Taka)

Statistics	Livestock value	Savings (last year)	Loan (last year)
N	96	31	47
Mean	16,469	9,758	9,809
Median	5,250	5,000	8,000
Minimum	600	2,000	3,000
Maximum	86,200	50,000	25,000
Standard deviation	22,959	12,487	5,445

Savings is another decisive asset of financial capital which can create opportunity to cope with the different sorts of unusual occurrences. This study identified based on last year record that about 28.7 % families have savings money ranges 2,000 to 50,000 BDT. In contrast, about 43.5 % households have taken loan from their relatives or local moneylenders and the loan size is ranges 3,000 BDT to 25,000 BDT (Table 4). The organization credit system is totally absent because of geographical uncertainty.

Physical capital

Physical capital is an important means of accelerating growth in household incomes. Total ten assets have jointly been determined as physical capital of the respected households. These are sanitation system, drinking water system, power supply, radio player, television, bicycle, sewing machine, mobile phone, shallow pump machine and power tiller.

Fig. 4 shows presence of selected assets of physical capital in the surveyed households. It is explored that near about 90 % of households have at least one mobile phone. This number is comparatively higher than the other assets because of low-price as well as prestigious indicator. In rural community of Bangladesh, other most effective social status indicators are personal sanitation, water supply and home lighting system. In the study area only 32 % of households have own sanitation system and 28 % have drinking water tube-well. In addition, about 28 % have personal solar power based home lighting system and less than half of them have television. This study also found that only few % of households have bicycle, power tiller, radio player, shallow pump and sewing machine facilities.

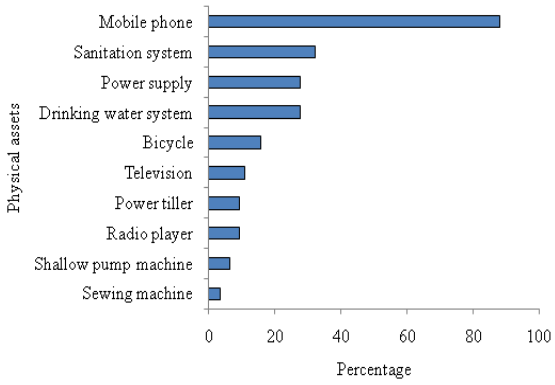

Fig. 4. Status of physical assets

Association between livelihood capital and well-being status

Household capital is important for the determination of well-being status of a family. Healthy status of household capitals plays a significant role of forming better well-being condition. The association between various parameters of five capitals namely human, social, natural, financial and political and well-being status are evaluated in the following sections.

Table 5. Association between household capital and well-being status

Capitals	**Statistics**	**Value**	**Sig.**
(a) Human			
– Family size	Gamma	0.468	0.013
– Maximum year of schooling among the family members	Gamma	0.375	0.044
– Number of Earning Person	Gamma	-0.248	0.293
– Earning Source	Lambda	0.095	0.176

Capitals	Statistics	Value	Sig.
(b) Social			
– No conflict with neighbours /relatives	Lambda	0.041	0.176
– Resolve conflict	Lambda	0.056	0.477
– Collective Effort	Lambda	0.057	0.176
– Member of local organization	Lambda	0.258	0.009
(c) Natural			
– Amount of family land	Gamma	0.774	0.000
– Amount of operational land	Gamma	0.839	0.000
(d) Financial (in BDT)			
– Value of livestock	Gamma	0.319	0.048
– Savings (last year)	Gamma	0.609	0.009
– Size of loan	Gamma	-0.335	0.052
(e) Physical			
– Sanitation system	Lambda	0.137	0.029
– Drinking water system	Lambda	0.187	0.002
– Power supply	Lambda	0.088	0.197
– Radio player	Lambda	0.031	0.654
– Television	Lambda	0.147	0.162
– Bicycle	Lambda	0.026	0.654
– Sewing machine	Lambda	0.038	0.563
– Mobile phone	Lambda	0.000	*
– Shallow pump machine	Lambda	0.207	0.153
– Power tiller	Lambda	0.125	0.369
– Physical asset composite score	Gamma	0.863	0.000

*cannot be computed because the asymptotic standard error equals zero

Human capital is comprised of four indicators e.g. family size, education, number of earning person and earning source. It is considered as the important determinant of living condition and the welfare of family members. It is found from the results that the association between well-being status and family size as well as education is statistically significant (Sig. <0.05) and the association level is moderate based on Gamma value (<0.5). Therefore, it is understood that the higher the family size and education level indicates higher the wealth status. But, the association with number of economically active person of households is not statistically significant (Sig. >0.05). Moreover, insignificant relationship was also found between sources of income and wealth condition (Table 5).

Subsequently, the association between wealth condition and social capital such as no conflict with neighbour, participation in resolving social conflict and collective effort, and attachment with local social welfare organization, here also called as community based organization (CBO). Table 5 shows among the indicators of social capital, association of well-being status and attachment with CBO is found statistically significant (Sig. 0.009) but week (Lambda: 0.258). On the other hand, results do not demonstrate any significant relationship with the other parameters of social capital. After that, relationship between natural capital and wealth status was determined. It is already stated that two indicators are used identifying natural capital i.e. amount of family land and operational (agriculture) land. The Gamma value confirms that well-being status and family land is strongly associated (Gamma: 0.774, Sig. 0.000). This means the higher the well-being status, the higher the likelihood of possessing a large amount of land. Besides, the association with operational land is also found statistically significant (Gamma: 0.839, Sig. 0.000). Therefore, it seems that the higher the wealth status of a person, the greater the possibility of cultivable land (Table 5). Further, the relationship between wealth status and financial capital such as value of livestock, size of savings and loan was calculated. Results shows the association of all indicators of financial capital with well-being status is statistically significant (Sig. <0.05). The Gamma value indicates strongly associated with wealth condition than others (Table 5).

Likewise, association of well-being status and physical capital was identified. Table 5 presents that, among the

physical assets only sanitation system and drinking water is statistically significant (Sig. <0.05) with well-being status. Afterward, a composite score for a household was computed by adding up scores given against the physical items where one household can get 1 (present) or 0 (absent) for each asset. Thus, a household can have maximum 10 composite score. The association between composite score of physical assets and well-being status is found statistically significant (Sig. 0.000) and the Gamma value 0.863 shows strong relationship (Table 5).

Conclusions

This study has been undertaken to assess the existing livelihood status of the char dwellers of the study area and analyse the relationship between their well-being status and different livelihood capitals. The result clearly shows that most of the char dwellers are either poor or hard core poor and they are functionally landless. Further, the study identified five capitals of livelihood to know their association with well-being status. They are (a) human capital include family size, earning source, education and number of earning person, (b) social capital comprises households with no conflict, conflict resolving attitude, collective effort and local organizational member, (c) natural capital consist of size of family land and operational land, (d) financial capital includes value of livestock, size of savings and loan, and (e) physical capital comprises ten household assets i.e. sanitation system, drinking water system, power supply, radio player, television, bicycle, sewing machine, mobile phone, shallow pump machine and power tiller. The association between these capitals and well-being status of the surveyed households has been analysed by Gamma and Lambda test. The result shows that family size and education of human capital are statistically significant at less than 0.05 levels. Likewise, organizational membership of social capital and family land as well as operational land of natural capital is significant at less than 0.01 levels. Similarly, value of livestock, size of savings and loan of financial capital are significantly associated with wealth status. Although most of assets of physical capital is not statistically significant but their composite score is significant and strongly associated with well-being status.

Overall, the status of livelihood (incorporated with different capitals) is not satisfactory and the association is somehow significant with the well-being status. This study suggests to ensure education facilities and effective family planning system, increase income generating options, ensure medical treatment, improve the activities of CBOs, provide low interest loan by initiating special programme and improve structural (embankment, road network and electricity supply) development in order to improving the livelihood status of the char dwellers of the study area. This research work done among the small number of population as well as in a small char area of Ganges River. In future, it is necessary to continue such research among the large group of people as well as in large char area.

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