**Title of the study:** Health shocks, care-seeking behaviour and coping strategies of extreme poor households in Bangladesh’s Chittagong Hill Tracts

**Short title:** Health shocks, care-seeking behaviour and coping strategies among extreme poor households

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**Abstract:**

**Background:** How and whether health shocks, care-seeking behaviour and coping strategies are interlinked and influence households resilience to ill-health remains an under-researched subject in the context of Bangladesh. This study investigates whether and how these factors interplay and impact the resilience of extremely poor *adivasi* (ethnic minority) households in the Chittagong Hill Tracts (CHT), Bangladesh.

**Methods:** Our analysis draws from qualitative data collected through a range of methods. We conducted 25 in-depth interviews (IDIs) of two *adivasi* communities targeted by an extreme-poverty alleviation programme, 11 key informant interviews (KIIs) with project personnel (community workers, field officers, project managers), community leaders, and healthcare providers, and 9 focus group discussions (FGDs) with community members. Data triangulation was performed to further validate the data, and a thematic analysis approach was used to analyze the data.

**Results:** Health shocks were a defining characteristic of households’ experiences of extreme poverty in the studied region. Care-seeking behaviours are influenced by an array of cultural and economic factors. Households adopt a range of coping strategies during the treatment or care-seeking process, which are often insufficient to allow households to maintain a stable economic status. This is largely due to the fact that healthcare costs are borne by the household, primarily through out-of-pocket payments. Households meet healthcare cost by selling their means of livelihoods, borrowing cash, and marketing livestock. This process erodes their wellbeing and hinders they attempt at achieving resilience, despite their involvement in an extreme poverty-alleviation programme.

**Conclusions:** Livelihood supports or asset-transfers alone are insufficient to improve household resilience in this context. Therefore, we argue that extreme poor households’ healthcare needs should be central to the design of poverty-alleviating intervention for them to contribute to fostering resilience.

**Keywords**: *adivasi* (ethnic minority), care-seeking behaviour, Bangladesh, Chittagong Hill Tracts, coping strategies extreme poor households, health shocks, qualitative study

**Background**

Health shocks are deeply related to poverty (1;2). Defined as ‘unpredictable illnesses that diminish health status’ (3), such shocks are widely perceived as inducing severe vulnerability, and important factor contributing to poverty in diverse contexts. Research and data across international contexts provide evidence that health shocks lead to income and expenditure uncertainty that triggers impoverishment at the individual and/or households level (4). Evidence from Cambodia, Ethiopia, Haiti, Sierra Leone, Senegal, and Vietnam for example suggest that a high proportion of treatment costs due to ill-health are met through out-of-pocket expenditure, representing a significant burden for households and negatively affecting their welfare (5-9). Likewise, studies conducted in Bangladesh show that catastrophic health expenditure (CHE) leads to impoverishment and pushes households into poverty. For example, Alam et al. argue that 3.5% of the total population (corresponding to approximately 5 million people) in Bangladesh fall into poverty annually due to out-of-pocket (OOP) payment mechanism, with 16.5% of poorest and 9.2% of the richest households faces CHE (10). Another study shows that households spend 11% of their total budget on healthcare, with 9% of households facing financial catastrophe (a severe event that damage households’ economy for short and/or long duration). This study furthermore suggests that the poorest have four times higher risk of catastrophe than the richest group (11). Hamid et al. argues that annually 3.4% of households in rural Bangladesh are pushed into poverty due to OOP outlays wherein chronic non-communicable diseases are the principle contributor (12).

It is often assumed that regardless of the magnitude of a health shock, seeking treatment is a first and very common step. Studies have however argued that treatment seeking is highly complex, and behaviour varies according to geography and demographics. In fact a wide range of factors have been identified as shaping the nature of treatment-seeking behaviour, including access and available of health care, severity of illness, resources, ethnicity, religion, sex and age (13). Health status is correlated with socioeconomic conditions (14) that determine choice for and attitude towards particular treatments (15). For Grundy et al. (7) there are three health determinants— individual/household, socio-cultural, and institutional and system. Here, we also find that the extreme poor tend to be significantly exposed to health shocks, while experiencing difficult and inefficient health-seeking processes that often in practice rely heavily on their own energy and savings (13;15;16).

Yet, over the past two decades Bangladesh has made unparalleled progress in some selected socioeconomic and health indicators. As far as economic performance is concerned, the country has maintained an annual GDP growth of over 6 per cent over the past 15 years (ref-BD planning commission). Poverty and extreme poverty rates have significantly dropped– from 53% in 1995-96 to 24.6% in 2016 for poverty, and from 40% to 12.9% for extreme poverty (17;18). With respect to health, Bangladesh made remarkable progress in reducing maternal mortality, increasing infant and child survival, life expectancy, widening the coverage for contraceptive, immunization, and rehydration therapy (19).

Healthcare services in Bangladesh are delivered through various channels including public health departments of the government, private institutions, and NGOs (20). The Ministry of Health and Family Welfare (MoHFW) is the apex body responsible for policy and program formulation, execution, management, coordination, and regulation of health, nutrition, and population related activities (21). The country has developed a comprehensive health service delivery infrastructure with a vast network of primary health care facilities from grassroots to higher levels. Healthcare services are delivered through uniform administrative structure from community to national levels.. The international public health community applauded these health gains, highlighting how the country has established and maintained a relatively effective and well-functioning health system with limited resources (22). However, these advances are unequally shared across the population with ethnic minorities, people living in remote locations, extremely poor individuals, socially excluded and economically marginalised groups often having limited access to public healthcare services (20;23).

Extremely poor *adivasi* (ethnic minorities) communities in Chittagong Hill Tracts (CHT)[[1]](#footnote-1) for example have comparatively poor health outcomes and face challenges in accessing healthcare services. Health seeking behaviour is influenced by a range of factors, including the prevalence of informal providers (traditional healers), gender preference in accessing healthcare and decision making process (males generally receiving preference in seeking care), overriding cost, unitary service delivery mechanism (the current healthcare delivery system is predominantly based on the priorities and needs of plain land people), and inadequate knowledge and awareness (24). Over 2 million Bangladeshi citizens are *adivasi*. *Adivasi* are mostly involved in shifting agriculture which is also known as (*jhum*) in Chittagong Hill Tract (CHT) (25). Their forest-based livelihood, language, cultural practice, religious faith and rituals are distinct from plain land Bengali’s[[2]](#footnote-2) (25;26). Since they largely reside in remote and peripheral area (mostly the CHT) where socioeconomic development tends to be lower and improving at a slower rate than in plain land, and the medical systems and health services remain problematic for the region’s development (26). Consequently, the incidence of health shocks has been identified as central to *adivasi* groups’ livelihood resilience (25). In the context of such poverty, livelihood interventions are promoted as a sustainable tool for poverty reduction and for improving the living conditions of disadvantaged groups. Livelihood interventions are generally deemed to positively impact poor households’ livelihood through increasing the assets and life skills of the individual and/or household. As such aforecited studies however also indicate, wellbeing and resilience of households are affected by a high exposure to health shocks, long and costly care-seeking process, and coping strategies. This raises the question of how such livelihood interventions impact on health seeking behaviour. Previous study noted that health shocks negatively impacted anti-poverty interventions and diminished households economy among extremely poor households’ since they financed greater healthcare cost through selling their means of livelihoods(27). Given the limited literature on this population group in Bangladesh, in this study we focus on ethnic minority communities who are living in remote locations. Existing scholarship lacks information about the process through which health shocks, care-seeking processes, coping strategies interplay and impact on extreme poor *adivasi* households’ resilience to extreme poverty in the CHT area. This study therefore contributes to addressing an information gap in research on poverty and offers a strong body of evidence for policy planners, programme managers, and implementers to design effective poverty-alleviation programmes targeting ethnic minorities. This study, we hope, will contribute towards better extreme poverty-alleviation programming in Bangladesh and beyond.

**Methods and materials**

**Study time and settings**

This study was conducted between May and September 2015 in three *upazilas,* namely *Lama*, *Naikhongchhari*, and *Ruma* of *Bandarban*—a Chittagong Hill Tract (CHT) district in Bangladesh. Certain information and findings from this study were previously disseminated through a ‘working paper’ (28). *Bandarban* is considered to be the most remote district of Bangladesh because of its geography—hills and rivers combined with poor road and communication infrastructures. These three *upazilas* share common boundaries and although they are characterized by various degrees of remoteness they together embody distinct socio-economic and geographic features compared to the rest of the country.

Lama is the biggest *upazila* of *Bandarban* and houses nearly half of the district’s population. The size of the *upazila* is 671km2 of which 332 km2 is reserved forests (29). The total population is 113,413 according to the census of 2011. There are six *adivasi* groups in the upazila—*Chakma, Marma, Murang, Tropura,* and *Tabjhong*. The major livelihood is agriculture (63%), and labouring (15%), services (8%), and animal husbandry and fishing (6%). The average literacy rate is 31% (30).

*Naikhongchhari* is 469 km2 (30), and according to the 2011 census, has 49,465 inhabitants. The major *adivasis* are *Chakma, Marma, Murang,* and *Tabjhong*. Their main livelihood is agriculture (51%), labouring (13%), transport and communication (9%), services (2%) animal husbandry and fishing (6%). The average literacy rate is also 31% (30).

Ruma has a total population of 2,02,683, according to the 2011 census. Eleven *adivasi* groups reside in this *upazila* (29). The major groups are *Chakman, Marma, Murang, Tropura*. The primary livelihood is agriculture (85%), labour (13%), transport and communication (6%), services (2%) animal husbandry and fishing (6%). The average literacy rate is slightly lower than in the other two *upazilas* at 26% (30).

**Project intervention**

In order to support the Government of Bangladesh’s (GoB) efforts to eradicate extreme poverty and hunger by 2015 (Millennium Development Goal 1) a programme called ‘Economic Empowerment of the Poorest/Stimulating Household Improvements Resulting in Economic Empowerment (EEP/Shiree)’ was developed through a partnership between the GoB, the ‘[UK Department for International Development (DFID)](http://www.dfid.gov.uk/where-we-work/asia-south/bangladesh/) and the ‘[Swiss Agency for Development and Cooperation (SDC)](http://www.sdc.admin.ch/)’. The programme ran between 2008 and 2016 (31). Its aim was to lift 1 million extremely poor people out of extreme poverty and improve their resilience. To achieve this objective, EEP/Shiree introduced two separate categories of funds—a ‘scale fund’, and an ‘innovation fund.’ The scale funds were provided to NGOs judged to have the capacities to facilitate large-scale interventions with tested and well-established models of intervention; while, innovation funding were awarded to innovative approaches to reducing extreme poverty in Bangladesh. Under innovation fund a project titled “Ensuring Sustainable Livelihood of Extreme Poor of Chittagong Hill Tracts”, was implemented by Caritas Bangladesh (ESLEP-CHT) in five *upazilas*. The project beneficiaries (households) were provided means of livelihood supports (ie. livestock, cash for operating small-scale business, and vegetable farming), life-skill training, and facilitated market linkage.

**Participants and sample strategy**

We draw our analysis from interviewing *adivasi* participants from the ‘Ensuring Sustainable Livelihood of Extreme Poor of CHT (ESLEP‐CHT)’ project and project staff responsible for the intervention’s implementation. We conducted 25 in-depth interviews (IDIs) (Table 1) with individual project beneficiaries from the ‘*Marma’* and ‘*Murang’* ethnic groups from three *upazilas*. We also carried out Key Informant Interview (KII) in Lama, and *Ruma* —3 were conducted with members of the implementing NGOs (Caritas Bangladesh), 4 with community members including a teacher, religious leader, and local government representative, and 4 with formal (government) and informal healthcare (traditional) providers. Additionally, we carried out 9 Focus Group Discussions (FGD), 4 with community members and NGO field staffs, 5 with community members. A purposive sampling strategy was used in recruiting participants—we considered three inclusion criteria—age >18 years old, willingness, and time availability. We did not receive any primary list for the potential participants from the implementing NGO (Caritas Bangladesh). Rather, we performed a transect walk in the sites and informally talked with the project beneficiaries and communities. Such informal talks help us reach a number of potential participants and contextualize the circumstances under which the interventions are being implemented. Finally, we interviewed these who received project supports. We also ensured maximum variation (ensured diversity among participants based on age, gender, means of livelihood, and sites) and gradual selection of participants. The participants were questioned on their past experiences of health shocks, their care-seeking and coping strategies, and the consequences of these on their lives and livelihoods. The sample size was determined according to the principle of data saturation—at a point where the researchers notice no new information and/or theme and/or dimension emerged in the interviews (32), it was considered that the amount of data was sufficient.

**Data collection procedure**

A team of 3 interpreters and 3 researchers with degrees in anthropology and public health conducted interviews and discussions in the field. The team members received significant training on qualitative research and had extensive field experiences researching poverty and NGO interventions. Interviews and FDGs were conducted in Bangla with the NGO staff and *adivasi* languages *Marma*, and *Mru* with participants. A semi-structured interview guideline was used to cover a range of topics relating to health shocks, and care-seeking process, and their consequences on livelihoods in the context of extreme poverty. On average each IDI and FDG lasted between 50 and 65 minutes and 90 to 120 minutes, respectively. Before commencing conversation, the researchers established good rapport with the interviewees. Detailed field notes were taken during the conversations and all interviews were audio-recorded, transcribed verbatim, and subsequently translated into English by first author and last author. In some cases, follow-up visits were arranged to fill gaps and to probe some early findings.

**Data analysis**

Thematic analysis was used to explore the interviews’ and group discussions’ transcriptions (33). Firstly, we generated forty seven codes collectively through repeatedly reading the data, and then coded all transcripts. Secondly, having completed the initial coding of the interviews, we independently looked for clusters of several codes—termed “themes” or “concepts.” Thirdly, to increase the validity of the coding system, as the research team members discussed emerging themes and early findings they triangulated the information collected before reaching a consensus on core concepts. We removed the names of interviewees during data analysis and used codes to anonymise participants personal and households’ information (ethnicity, age, sex, occupation, religion, marital status, education). Rather, we used participants ID numbers throughout data analysis and removed these before report findings. Software for textual analysis such as *ATLAS-ti*, and/or *Nvivo* were not used to organize or code the data.

**Ethics**

This study obtained ethical approval from the University of Bath, UK, a member of the EEP/Shiree management consortium responsible for overseeing the qualitative research undertaken through the programme. Locally, we obtained ethical approval from ‘Stimulating Household Improvements Resulting in Economic Empowerment’, a development programme under the Rural Development and Cooperatives Division (RDCD) of the Ministry of Local Government, GoB. We developed an informed consent paper to explain the objectives, importance, anonymity, confidentialities, possible risks and benefits, participant’s rights and potential sources of further information. A written consent was read out and we encouraged the participants to raise any questions about the interview process. We sought written approval before conducting each interview, and documented the interviews/discussion via audio recording.

**Results**

This section briefly presents the 25 participants’ demographic profiles (Table 1) and provides details about the KIIs and FDGs. The mean age for ‘*Marma*’ was 27 (SD±8), and 29 (SD±7) year for ‘*Murang*’. Among them, 14 were male and 11 female. More than half of participants had no formal schooling, while 1 had X (ten grade) grade schooling. The large majority of participants were married and belonged to a nuclear family structure (16). The predominant occupation was *jhum* cultivation (10), followed by day labouring (5), handicraft (3), and small business (3).

Table 1 Data collection methods and respondent characteristics

|  |  |  |  |
| --- | --- | --- | --- |
| **In-depth interviews (IDIs) [n=25]** | **Participant characteristics** | **Ethnic communities** | **Upazila** |
| ***Marma* (n=14)** | ***Murang* (n=11)** |
|  | **Age in years (mean ±SD)** | 27±8 | 29±7 | *Lama, Naikhongchhari*, and *Ruma* |
|  | **Monthly household income in BDT (mean ±SD)** | 4300±550 | 4600±580 |  |
|  | **Sex (*n*)** |  |  |  |
|  | Male (*n=16*) | 9 | 7 |  |
|  | Female (*n=9*) | 5 | 4 |  |
|  | **Education (*n*)** |  |  |  |
|  | 1-5 | 3 | 4 |  |
|  | 6-10 | 2 | 2 |  |
|  | 10+ | 1 | 0 |  |
|  | No formal schooling | 8 | 5 |  |
|  | **Marital status (*n*)** |  |  |  |
|  | Married | 9 | 6 |  |
|  | Unmarried | 5 | 5 |  |
|  | **Family Type (*n*)** |  |  |  |
|  | Extended | 6 | 3 |  |
|  | Nuclear | 8 | 8 |  |
|  | **Occupation (*n*)** |  |  |  |
|  | Jhum cultivation | 7 | 3 |  |
|  | Handcrafter | 1 | 2 |  |
|  | Small business | 2 | 1 |  |
|  | Day labor | 2 | 3 |  |
|  | Hunting and gathering | 1 | 1 |  |
|  | Others | 1 | 1 |  |
|  | **Religious belief (*n*)** |  |  |  |
|  | Buddhism | 11 | 8 |  |
|  | Others | 3 | 3 |  |
| **Key Informant Interview (KII) [n=11]** |  |  |  |  |
|  | 3 representatives of implementing NGOs  | 4 community leaders including, teacher, religious leader, and local govt. representative | 4 healthcare providers including govt. and traditional healers | *Lama*, and *Ruma* |
| **Focus Group Discussion (FGD) [n=9]** |  |  |  |  |
|  | 4 including Community members, and NGO field staffs | 3 Community members | 2 Community members | *Lama, Naikhongchhari*, and *Ruma* |

Based on the initial ‘code’ we categorised them into three themes (Figure 1) which are interrelated and influence each other.

**Figure 1: Dominant themes**

**CARE SEEKING BEHAVIOUR**

**HEALTHHOCKS**

**Barriers**

Social

Geographic

Economic

Linguistic

Age

Gender

Peers network

Household composition

Cultural practice and belief system

Socioeconomic conditions

**COPING STRATEGIES**

Assets selling

Borrowing/Loan

Engage children in work/labor

Change dietary intake

**Health shocks**

All the participants reported having experienced multiple health shocks during the lifespan of the project intervention. Of all the health conditions reported, they particularly described chronic illnesses, and short-term shocks that vary by season. For example, during the summer season, communicable disease and infection i.e. diarrheal diseases, malaria, and typhoid were prevalent in all three *upazilas*. In the winter period, participants reported respiratory and skin diseases such as pneumonia, asthma, and fever to be common. Non-communicable Chronic Diseases (NCDs) including diabetes, cardiac complications, and maternal illnesses, were commonly reported from all sites. A female NGO employeestated:

*‘We noticed that many project beneficiaries suffer from communicable disease in the monsoon. […] but in the winter mostly they face respiratory illness like asthma, and common cold. Other non-communicable diseases appear to be prevalent throughout the year.’*

**Health seeking behaviour**

Care-seeking behaviour was influenced by a range of factors including age, gender, peer network and influence, cultural practice and belief system, as well as the socio-economic status of the individuals and/or households. Participants commonly reported that decisions regarding individual care were taken by the household head, which often is a working-age male household member. Females, children, and other non-income-earning household members (disabled or very elderly) are more likely to be taken to informal healthcare providers like homeopaths or traditional healers than working male members. Their care-seeking process is also likely to be neglected and/or delayed. One male participant reported this directly during a focus group discussion:

*‘Men are the key earners and mostly the decision maker of the family; because of this they have the most influence over the health seeking process. […]women and children are given less attention in seeking care within the family.’*

This participant also explained that the care-seeking process tended to start quickly after the first signs of illness of income-earners who by and large are male household members. Among others, senior members of the households for example parents and in-laws were found to be influential in the care-seeking process. As one participant explained

*‘Parents are respected. Besides, they may hold the ownership of property; […] they normally get good care from family members.’ (A male participant from IDI in Naikhongchhari)*

Peers and neighbouring networks, religious beliefs and rituals appeared to influence the care-seeking process significantly. Some participants viewed neighbours’ roles as useful when seeking care. A participant explained this process during an in-depth interview:

*‘Sometimes, neighbours come up with good advice about seeking healthcare. It might be helpful to get useful information about what type of care a person needs and possibly where from.’ (A male participant from IDI in Lama)*

However, nearly one-fourth of participants reported that neighbour rarely show interest while a person is ill. Rather, it is considered a private matter whether to seek care or not and how to do so.

Religious beliefs and rituals shaped the care seeking process as a few participants claimed those people who follow their religion strictly are likely to seek care from religious healers. Households often perform group prayers and regular offerings to their God (through sacrificing livestock for example). These practices incur significant additional expenses as one participant’s experience shows:

*‘I sacrificed one goat, one pigs, and nine chickens which cost large amount of money.’ (A female participant from IDI in Naikhongchhari)*

Elderly members of the household are likely to have a preference for care from traditional healers. As one of the participant reported:

*‘The elderly people might have been used to taking traditional care throughout their generation. And they still opt for their service. […] the younger generation is often not so convinced by them.’ (A female participant from FGD in Naikhongchhari)*

Socio-economic conditions were commonly mentioned to be a strong determinant of the course of seeking care. For the extreme poor, informal care providers such as *Baiddaya* (herbalist) and religious charmers were common first points of contacts. Their services incur relatively low costs and are believed to be efficient for major common illness. A participant reflected:

*‘Baiddayas (traditional herbalists) are knowledgeable and good at giving you useful care. Many of us get cured through their treatment’ (A female participant from IDI in Ruma)*

Moreover, many participants reported that traditional herbal medicine is a central element of their local health system. People who suffer from skin problem like itching, allergy, eczema, fungal infections and scabies rely on herbalists. They however are not considered as efficient when it comes to treating chronic diseases. An experienced male NGO staff member said:

*‘Herbal medicine and herbalist is a strong element of local health system. Possibly, it can bring some good results in case of common illness. But, it might not be effective for chronic diseases which force families to be trapped in poverty.’ (from KII in Lama)*

In addition, self-medication was identified as a common first step in the health-seeking process of the extreme poor across all sites. Simultaneously, unqualified allopathic practitioners are popular because they are easily accessible with low cost. But the problem is that many times it leads to complication and mistreatment which result in higher health risk and larger cost.

**Barriers**

Geography was reported to be a significant barrier to seeking care from formal (public) healthcare services. Mobility is a challenge across the region, and the *adivasi* population relies on local jeeps, rickshaw, buses, or boats to travel. When someone faces a health shock, regardless of whether the medical facilities exist, travelling to the place of treatment is a significant obstacle, often discouraging people from going to a hospital or visiting qualified doctors. One participant stated:

*‘I live six kilometres from Ruma town. When I fractured my leg I could not find a way to travel there as it involved crossing the hills and rapid rivers to reach the nearest hospital. There was no qualified doctor nearby, nor was there a paraprofessional or local medicine seller could access to get a medical check-up. I therefore went to see a traditional healer and religious charmer both of who were near my village.’ (A male participant from IDI in Ruma)*

Structural obstacles such as a shortage of healthcare providers, irregular supply of medicine and equipment, limited investigation and diagnostic facilities, and general poor quality of services in *Upazila Health Complex* (the first-line hospital in Bangladesh) was reported as a barrier from all sites and participants. A participant explained

*‘Currently there are only four doctors against thirteen sanctioned posts in Ruma upazila,. Lama and Naikhangchari Upazilas have three and two doctors [respectively] whereas eleven and twelve posts are sactioned.’ (A male participant from KII in Ruma)*

Similarly, another percipient explained:

*‘Critically ill people were carried on people’s shoulders to the Upazila Health Complex and returned to their villages without receiving proper treatment because there was no medical officer there.’ (A male participant from KII in Lama)[(28)]*

Furthermore, negative experiences with formal health facilities confirmed communities’ prejudice against modern and/or public medical treatment. A participant reported:

*‘A new-born baby got sick and died after getting an immunization shot. That resulted in people losing faith on vaccination among Marma community as they think the immunization caused the baby’s death.’ (A male participant from FGD in Ruma)*

Apart from these, some participants reported that they faced linguistic problem to explain their complication as some the healthcare providers are unable to understand the patients’ language. This problem was reportedly severe when the healthcare provider is not from an ethnic minority.

**Coping strategies**

**Assets selling/breaking savings**

Our data revealed that households adopted two strategies to cope with health shocks—firstly, to increase income or money flow in the household and secondly, to reduce expenses. These processes are often long and involve immediate and/or longer-term costs. Sometimes the household use their little savings; at other times, they sell their property and/or take loans. Household mobilize resources, often having to sacrifice their wellbeing, assets, time, and labour. However, the extreme poor households in the CHT have a very low propensity to save. It was revealed that there is no scope for them to save formally through institutions in (there are few banks and few microfinance institutions in *upazila* town). Extremely poor households tend to save little through informal savings systems. Occasionally, households save for a particular purpose (house repairs or other livelihood assets), but rarely for unpredictable emergencies. In some cases, the small amount of money saved is used for seeking a cure for mild illness of a household member but often the amount cannot cover the costs of serious illnesses. A participant stated:

*‘I had saved BDT 3000 [(US$ 37), considering BDT81=US$1] to repair and rebuild my house, but I could not do so because I had to use BDT 2000 (US$25) for my mother’s, my daughter’s, and my own treatment.’ (A male participant from IDI in Lama)[(28)]*

Furthermore, where treatment is unsuccessful, high costs incurred (direct and indirect, financial and human costs), and time consumed, this worsens the situation of extreme poor households who generally keep seeking various types of treatment until cash and savings run out. Sometimes they wait for the harvest season to be able to try again. When households have little to no cash savings to afford treatment, or when they are searching for effective treatment options, they tend to mobilize financial resources by selling or mortgaging assets. Although this enables them to gather cash to cover health related costs, selling and using physical assets (productive or non-productive) often has long-term impacts on a household’s resilience. Commonly, households sell livestock (if available) or consumer items such as crops, spices, fruits or vegetables. One participant stated:

*‘Caritas gave me two pigs. I have reared them. But, I had to sell one to manage money. If I hadn’t sold it for treatment costs, I could have reared it for longer and sold it at a higher price. I could have used the money to buy more pigs or some other asset.’ (A male participant from IDI in Naikhongchhari)[(28)]*

Sometimes households are forced to sell the asset and input support provided by their NGO. While providing much needed liquidity, this can severely compromise their longer term well-being and capacity to earn, thereby impoverishing them further. One *adivasi* project beneficiary who had suffered this situation stated:

*‘While trying to cure a life-threatening disease (cancer tumour), we were forced to sell our assets and take out a loan. However, we did not receive good treatment from the specialized doctor. We ended up assetless and unable to work, forcing my family into destitution.’ (A male participant from IDI in Ruma)[(28)]*

**Borrowing/Loan**

In some cases the extreme poor *adivasi* households have neither assets nor savings (or possess an insufficient amount of both). In such circumstances, having exhausted other possible options to seek treatment, they often resort to borrowing capital. In these contexts, the sources of such loans are predominantly informal, primarily family members or friends, landowners, moneylenders, or perhaps a community association, and rarely Microfinance Institutes (MFIs). The preferred option from these is very often relatives and neighbours, because generally low interest will be required in repayments. By contrast, moneylenders and employers (such as landlords) charge high interest rates, and are often the richest community members. Annual interest rates are often around 50% for such loans, however the advantage is that they are available throughout the year, and can be repaid after the season for *jhum* cultivation. Problems arise if they fail to repay during this period however, with households often incurring a further 50% interest on the loaned amount if they manage to repay after the harvesting season. An IDI participant stated:

*‘I took BDT 20,000 (US$ 247) from my sister (with no interest) and BDT 15,000 (US$ 185) from Karbari (a community leader) at a 5% monthly interest rate. As a result, I have accumulated a lot of debt. It can be more than BDT 50,000 (US$ 617) which I struggled to repay because I can’t do physical labour.’ (A male participant from IDI in Naikhongchhari)[(28)]*

During the project lifespan, NGOs do however provide some assistance to addressing these challenges. In the context studied for example, Caritas ran a safety-net scheme for project beneficiaries which provided support for beneficiary in these circumstances. This scheme afforded beneficiaries (assuming they were able to contact project staff), BDT 1000 (US$12) for treatment costs.

**Engaging children in work/labour**

The coping strategies deployed by these households to meet these shocks often directly affect the well-being, education, and thus futures, of the *adivasi* children. When households struggle to meet the costs of treatment, daily expenditure is very often reduced. An important cutback that is often made is the schooling of the household’s children. Withdrawing a child from school is a way of reducing expenditure, and also enables households to send children to work, either being paid (and thereby directly contributing to family income) or unpaid (perhaps receiving food, and thereby indirectly reducing costs, or working with the family). A common outcome is for children to work on *jhum* land. A participant stated:

*‘My daughters were engaged in jhum cultivation because of my illness. I had taken out a huge loan and without a good yield I would not be able to pay it back. Because of this my daughter had to work.’ (A male participant from IDI in Lama)[(28)]*

Similarly, another participant reflected

*‘My 13 year old son studied in grade III, but is now working on our jhum land.’ (A male participant from IDI in Ruma) [(28)]*

These situations are most common in the case of longer-term illness, or disability, although also occur as a response to a shock such as a sickness.

**Change dietary intake**

A further means by which expenditure is reduced is to compromise on the quality and quantity of food consumed. Instead of eating protein (meat and fish are expensive items however occasionally consumed), households would scavenge vegetables from nearby forests and fields. A participant said:

*‘I had BDT 500 (US$ 6) cash in hand to buy food for my family. When I was attacked by a viral fever, I spent BDT 120 (US$ 1.5) to buy medicine. I had to readjust the expenses by cutting food consumption.’ (A male participant from IDI in Lama) [(28)]*

Another participant echoed:

*‘I am worried about the future. If we eat more, our rice stock will run out early and then we might need to borrow. So, it is better to reduce our daily food intake and save for future days.’ (A female participant from IDI in Naikhongchhari)[(28)]*

**Resilience**

Participants reported having little ability to mobilise sufficient funds for treatment from their savings. Most of the time, they use their cash for daily expenditures. Compromising on food intake and expenses on children is often then a common outcome. Such healthcare expenses diminished the potential for improving lives and livelihoods (e.g., repairing one’s home, buying income generating assets such as livestock, investing in education, and participating in community events such as festivals). Using that money for medical purposes prevents them from doing what they had planned. A participant remembers:

*‘If I had not spent money on treatment, I could have repaired my house. But illness left no other choice except suffering during monsoon. Now rainwater will pour through the holes in the roof. To cope with ill health, I have compromised on my housing’ (A male participant from IDI in Naikhongchhari)[(28)]*

These compromises have a long-term impact on the nutritional status of these households. Taking fewer meals and lower quality food (less diverse and less nutritious) reduce household members’ short-term labouring and earning capacity, which over time can lead to deteriorating physical health and have significant consequences for well-being and mental health, also putting household members at risk of being afflicted by illness more often.

This impacts certain household members more than others. Children and women in particular quickly adjust their behaviour and expenditure, compensating also by increasing their care work within the home, and working beyond the homestead. This represents a significant burden, with continued and often exacerbated responsibility at home (caring for those affected by illness, for children, cooking and cleaning), while also working out of the house more. This alters the trajectories and opportunities for all those affected. As a participant expressed it:

*‘I cannot think of marrying my daughter because she has replaced me as the main income-earner.’ (A male participant from IDI in Lama)*

Overall participants reported that health shocks decreased households’, individuals’ and/or communities’ ability to anticipate, cope with, and recover from adversity, adversely affecting their long-term plans and prospects.

**Discussion**

This study aimed to understand health shocks experiences, care-seeking behaviours, coping strategies and their implications for the resilience of extreme poor *adivasi* households living in the CHT and benefiting from a poverty-alleviation intervention. The factors identified, emerging from multiple qualitative data sources, are largely comparable, are interconnected and influence each other (Fig 1). Health shocks were frequently reported throughout the interviews causing larger healthcare expense, which was made via out-of-pocket payments.

An earlier study (34) conducted in CHT shows that major illness included fever, diarrheal disease, under-nutrition, influenza; however, in our study chronic non-communicable (NCDs) diseases were those reported to incur larger cost. Although in this study we did not estimate the prevalence of NCDs because of the qualitative nature of the study design, the participant households were severely affected by the NCDs because they need to take prolonged facility based care. Our findings show that an epidemiological transition is underway where NCDs are coming forward in Bangladesh (35;36).

In line with previous studies, our study reveals that informal healthcare providers were predominant in the care-seeking process (34;37;38). For example, homoeopaths, and unqualified allopaths were reported as a primary point of contact in this process. Furthermore, gender and age appeared as determining factors. Women and adolescent girls tended to seek care less frequently and later than men, a finding which is supported by earlier studies (16;34). Informal care providers are usually chosen for the treatment of children and women; however, considering the perceived severity of illness such as chronic condition (serious injury, cardio-vascular problem, congenital complication, tumour), and severe infectious disease (malaria, typhoid) they sought care from qualified health care providers (qualified allopath) (39). Additionally a higher proportion of participants chose self-medication because it incurred little and/no cost which is concordant with other observation (40). Cultural and religious beliefs, traditional practices and rituals are strong drivers in the care-seeking process, such that traditional healers, religious charmers, and herbalists were very popular among the community, possibly because this process was of relatively low cost (37;38). Further, geographical marginalisation reinforced households’ preference for traditional healers, religious charmers, and herbalists, as quality care especially from qualified healthcare providers was less physically and culturally accessible. Unlike other studies, our findings show that the socio-economic (41) status of the household appeared as determining factor for choosing providers. In line with studies across global context, our study reveals that language skills reported to be a major inhibiting factor for seeking care from the formal health service as it jeopardized effective communication between the service users and health care personnel, making this services less convenient and accessible (42-45). In our study the context was even more complex as fourteen (26) major ethnic minorities who maintain distinct languages live in the CHT.

Our study show that high occurrence of health shocks severely affect the economic status of EEP/Shiree beneficiaries and their prospects (27). Out-of-pocket payment system coupled with high opportunity costs resulted in extreme poor households being unable to pursue their livelihood strategy and in many cases caused them to fall deeper into extreme poverty. Studies across global contexts are in line with this finding wherein the poor household covered direct and indirect healthcare cost and subsequently forced to deeper poverty (46;47). A survey study confirms that ill-health and poverty are closely associated and they maintain a causal direction wherein poverty produces ill-health, which then sustains poverty (1). Another study conducted by van Doorslaer (48) estimated that the absolute rate of poverty is 14% higher that the figure estimated using a conventional method which does not include out-of-pocket payment for using health services. This study further argued that there is an estimated 3.8% increase in poverty caused by healthcare related cost in Bangladesh (48). However, some studies argue that households’ economic status is determined by a set of factors. For example, Krishna and colleague shows in a trajectory study in India wherein 85% of all cases declined into poverty caused a combined factors that included healthcare expense, private debt with higher interest rate, and social and customary expense (49).

In response to health shocks the households adopted a range of coping strategies (savings, asset selling, loans, and food consumption). The studies conducted globally support our finding. For example, Quintussi and colleague showed 34% of poor household in India are affected by health shocks and cope with such adverse events through selling assets, dissaving, and borrowing (50). Similar observation were made in other studies such as taking credit from money lender, relatives, and friends in Cambodia, Indonesia and India (51-53), cutting food consumption in Laos (54) and selling livestock in Burkina Faso (55).

The immediate impact of health shocks was very significant as it affected income earners in most cases. The key income earners lost their livelihoods which generally affected nutrition, savings, children’s education, and child labour, food consumption—and in the end, their households’ resilience to poverty. Although resilience to poverty varies significantly according to the severity of diseases, generally health shock diminished households’ potential for overcoming poverty and exacerbate their vulnerability. The coping strategies analysed in this paper also suggest that this processes has inter-generational implications for the prospects of *Adivasi* households’ children*.*

**Limitation of the study**

The findings of this study were elicited from a small sample size because of the qualitative study design; with the risk that the generality of the findings from this study may be limited. However, to increase the validity of the findings, we triangulated the research tools (IDIs, KIIs, FGDs), participants, and sites. Additionally, we performed a rigorous literature review to validate our findings. We therefore believe this study presents a fair understanding about health shocks, care-seeking behaviours and coping strategies among ethnic communities in the CHT. Given that the focus of this study is on ethnic minorities in a geographically unique region of Bangladesh, findings will in certain regards likely not be generalizable to the majority Bengali Muslim population living in the plain lands.

**Conclusions**

The findings of this study argue that health shocks appeared as common phenomena among extremely poor *adivasi* households in the CHT. Exposures to health shocks resulted in failure in achieving sustainable economic development of the households despite the implementation of multi-years anti-poverty interventions. Catastrophic OOP expense, along with inadequate public health supports, and contextual factors (i.e. geographical remoteness, illness interpretation, presence of a large cadre of informal healthcare providers, social values and stigma) further deteriorated households’ economy and welfare. Poverty reduction interventions targeting to underprivileged and outreach population such as ethnic minorities; therefore, should be customised with healthcare supports that can reduce the high burden of OOP. Community-based health insurance and/or micro-insurance will likely to be effective safeguard for the vulnerable communities. For instance, the Government of Bangladesh (GOB) is piloting a health protection scheme called ‘*Shasthyo Suroksha Karmasuchi (SSK)*’ targeting the extreme poor to reduce out-of-pocket payment (56). Similarly, SAJIDA Foundation developed its community health program under micro-insurance program called *Nirapotta* (safety net) to provide basic primary healthcare to the micro-insurance policyholders and their family members (57). icddr,b modelled a micro health insurance (MHI) scheme named ‘*Amader Shasthya*’ meaning ‘our health’ targeting to the poor and these involved in informal sector in *Chakaria* to provide health-related financial risk protection (58). We argue that poverty reduction interventions can incorporate components for health related financial risk protection such as community-based health insurance and/or micro health insurance as modelled and/or piloted in several contexts in Bangladesh. Otherwise poverty reductions interventions (i.e. livelihood support) alone will likely be insufficient to achieve optimal anti-poverty outcomes among extreme poor households.

**Abbreviations**

CHT: Chittagong Hill Tract; DFID: [Department for International Development;](http://www.dfid.gov.uk/where-we-work/asia-south/bangladesh/) DSK: Dushtha Shasthya Kendra; EEP/SHIREE: Economic Empowerment of the Poorest/Stimulating Household Improvements Resulting in Economic Empowerment; ESLEP-CHT: Ensuring Sustainable Livelihood of Extreme Poor of Chittagong Hill Tract; FGD: Focus Group Discussions; GDP: Gross domestic product; GoB: Government of Bangladesh; NGO: Non-governmental Organization; IDI: In-Depth Interview; KII: Key Informant Interview; NCD: Non-communicable Chronic Diseases; UNHCR: United Nations High Commissioner for Refugees

**Declarations**

**Ethics approval and consent to participate**

Ethical approval was granted by the University of Bath. Locally we obtained ethical approval (Protocol number 018, Ref: RDCD/2014/018) from ethical review committee of ‘Stimulating Household Improvements Resulting in Economic Empowerment’, a development programme under the Rural Development and Cooperatives Division (RDCD) of the Ministry of Local Government, Government of Bangladesh. The programme was led by a Joint Secretary of the Ministry. We sought written consent from the participant during the interviews. In case of illiterate participants we took finger prints.

**Consent for publication**

Not applicable.

**Availability of data and materials**

As we informed the participants during the consent process that data would only be shared within the research team, then the data cannot be made available publicly. Interested parties may contact Mr. Md. Mirazul Islam (miraz@dskbangladesh.org), Administrative Officer, DSK-SHIREE, for further inquiries in this regard.

**Competing interests**

The authors have no conflicts of interest to declare.

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AK performed analysis and reviewed the manuscript. RD coordinated fieldwork, participated in data collection, and performed analysis; SHR participated in data collection, and performed analysis MRLM conceptualized the study, guided the data collection and analysis, reviewed and edited the manuscript. All authors read and approved the final version of the manuscript.

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1. Chittagong Hill Tracts is the only extensively hilly area in south-eastern part of Bangladesh comprises a total area of around 13,295 square kilometres (5,133 sq mi) which is approximately one-tenth of the total area of Bangladesh. This tracts is encompassed by three hill districts—*Rangamati, Khagrachari* and *Bandarban*. This tracts is the home of over fifteen ethnic groups—approximately 850,000 people. [↑](#footnote-ref-1)
2. Bangladesh is the largest low-lying deltaic plain on earth. Three major rivers (Ganges, Brahmaputra, Meghna) and their tributaries comprise approximately 67% of its land territory. Except some ethnic groups living in hilly areas, the vast majority of people are living in this low-lying plain—often known as plain land Bengali. [↑](#footnote-ref-2)