PROJECT REPORT

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Contents

Dedication:

This piece of work is dedicated to my Parents.

Acknowledgement:

I express my deep gratitude to my supervisor Astrid Leck who helped me lot with her valuable guidelines and suggestions at different stages of my research work.

My heartfelt thanks to the **Commonwealth Scholarship Commission** and **ORBIS UK** for sponsoring me to study MSC in Community Eye Health at LSHTM.

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Eventually I express my deep love and thanks to my beloved wife Dr. Shoma and loving kids Atasia and Dujana who endured one year without me around them.

Abstract:

This cross sectional study was carried out to determine the prevalence and type of non vision impairing conditions (NVIC) amongst the *Char* population in Bangladesh to develop an appropriate Primary Eye Care Programme for them.

A total of 708 people were enumerated from 10 villages and 695 people were examined. The response rate was 98.2 % (With 95% CI 96.8 % to 99.0% for the responders) with male and female participation rates of 48.7%and 51.3%.

NVIC was found in 33.2% of population. Presbiopia was main cause of NVIC (22.3%). Conjunctivitis and Vitamin A deficiency were more common below 17 years of age. People suffered from NVICs (82.6%) had a visual acuity of 6/18 or better. A total of 73.5% people did not own agricultural land and 64.1% did not own their house land. The main occupation was agriculture if we had excluded housewives and students. The gross monthly expenditure was Tk 3500-6000(US$50-85) in 74.6% people and 46.1% people were illiterate. Response rate of having some facilities of primary health care was 67.9%. For treatment 44.8% people used local health complex and 44.21% seek services from Palli Chikishhak. For eye diseases 10.6% people seek treatment and 54.9% people did not have treatment for financial strain. Among all participants 15.54% reported that some NGO based eye care service providing organization used to come to their places to provide eye treatment, refraction services and screening of cataract patients.

Conclusion: Amongst the most remote community, the Char population, non vision impairing ocular conditions such as presbiopia and mild refractive errors are common, like people of other areas. Conjunctivitis and VAD are important causes due to lack of immunization and low service coverage. Due to financial strain, illiteracy and ignorance Char residents still depend on inappropriate service providers. With efforts of government and non government health and eye care service providing organizations an appropriate primary eye care service could be implemented for the Char population.

1.1. Introduction:

NVIC: Non-vision-impairing conditions (NVIC) are a collection of ocular disorders that range from conditions like lid margin inflammation, chalazion, stye, Pingueculae/Pterygium , trachoma, vitamin A deficiency (Bitot's spots, conjunctival xerosis and night blindness), dry eye disease, hay fever conjunctivitis, bacterial or viral infections of the conjunctiva, chronic dacrocystitis, mild refractive errors (where presenting vision is better than 6/18) and presbiopia.[1] Most of NVIC are with presbiopia, conjunctivitis, mild refractive error which are treatable or correctable.[2] Usually the NVICs do not hamper with normal vision but may hamper normal work significantly by reducing quality of life. NVICs may lead to blindness as its consequence if not treated or undiagnosed.[1] Vit A deficiency is one of the leading cause of childhood blindness and is a priority of Vision 2020.[3] Throughout the world 260,000 children have severe visual impairment or are blind due to corneal causes. Vit A deficiency is the major cause of corneal opacity and most of the cases live in poorest countries of Asia and Africa.[4] Chronic dacrocystitis may develop bacterial conjunctivitis and as a sequel of conjunctivitis corneal ulcer may develop and ultimately endophthalmitis may lead to blindness.[5] Similarly conjunctivitis alone may develop corneal ulceration which is also a threat to eye sight. Pterygium by virtue of its growing nature causes astigmatism which hampers with visual acuity and if it is kept untreated may cover the cornea at a stage which eventually leads to severe visual impairment.[6] some lid inflammation like chalazion, stye may lead to trichiasis and lid deformities as sequel which may again turned into severe keratitis. Similarly blepharitis also leads to tear dysfunction and marginal keratitis.[6] Most of the patients attend in outdoor clinics belong to NVIC group and each outpatient department of eye hospitals remain engaged more for providing treatments to the affected with NVIC.[1]

No studies have been done to see the prevalence of NVIC among the *Char* people who are hard to reach but in respect of the high number of population it was quite significant to address. There were some studies on individual disease which fell in NVIC and information on prevalence of diseases was possible to know. The current study was designed specifically to explore the magnitude of NVIC amongst a selective sample of *Char* population in Rangpur district of Bangladesh.

1.2. Background to Bangladesh:

Demographic indicators of Bangladesh: [7-9]

Table -1

Area	147,570 sq.km
Population in 2001	123.1 million
Annual population growth rate	1.47%
Population live in rural areas	77%
Per capita Gross National Income (GNI)	US $ 520
Population lived below the poverty line	36%
People lived on agriculture	63% of country's work force
Life expectancy at birth	66years
Total fertility rate	2.3
Youth (15-24 years) literacy rate male	71%
Youth (15-24 years) literacy rate female	73%
Total adult literacy rate	54%
Childhood mortality rate	14
Infant mortality rate	43 per1000 live births
Immunization coverage	82%.

Bangladesh has to face natural calamity every year. The southern part is victimized by cyclone, tornado and northern part is victimized by flood and drought. As consequences people living in these areas are often to suffer from famine. Due to global climate change Bangladesh is believed to be more vulnerable to it. Though it has to face lot of calamities but still it has shown some better performances in last three decades in various sectors like health, education and economy.

1.2.1. Health Services in Bangladesh:

Both public and private sectors are providing health care services in Bangladesh. Private sectors are emerging due to huge demand of health services which has been increasing with the growing economy and population growth as well. But maximum private health care service providers find their location in the urban areas. Some non-government organizations (NGO) have started their health care services for both rural and urban population with primary health care packages but obviously these are found inadequate to serve the population as per needs. To meet demands public sectors still catering the highest services in this country. It has well infrastructures from divisional to union levels. "As of 2008, there were 1,399 and 413 health facilities at Union and *Upazila* levels respectively, to provide primary care. The 59 district hospitals and 2 general hospitals provide secondary care in the

country. There are 23 hospitals attached to medical colleges and universities to provide tertiary level care. A total 8,369 physicians (doctors and dentists), 25,699 paraprofessionals (medical assistants and health assistants), 14,971 nurses and 104,136 extension workers have been working in public health sector".[9]

Facts on Bangladesh health status:[10]

- The majority of births (85%) in Bangladesh take place at home.
- The maternal mortality ratio in Bangladesh is high, with 320 women dying for every 100,000 live births.
- Two fifths of Bangladeshi children (41%) are underweight.
- Child mortality is high, with 65 deaths of children under 5 per 1,000 live births.
- Neonatal deaths in Bangladesh account for 57% of all child deaths.
- The number of children born per Bangladeshi woman is currently 2.7.
- Tuberculosis (TB) is the leading cause of adult mortality in Bangladesh.

1..2.1.1 **Primary Health Care Services:** [11]

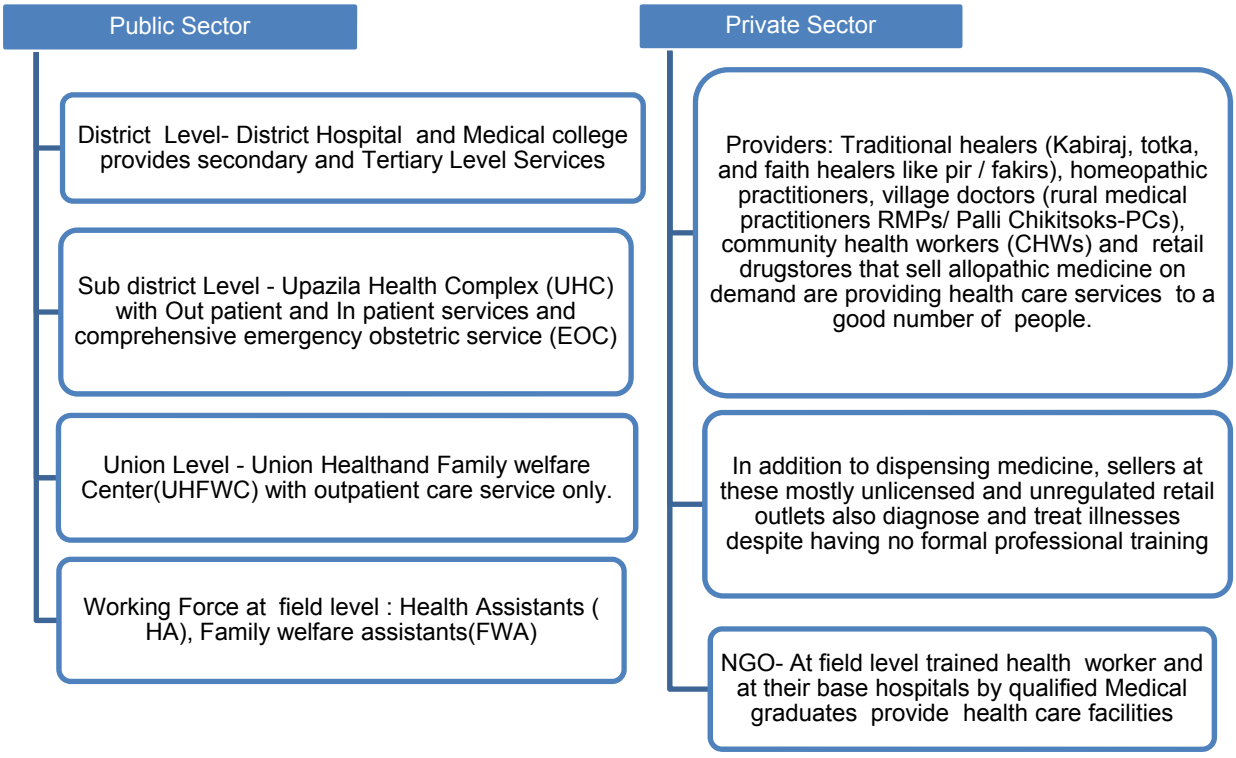


Diagram -1 show the service delivery centers along with providers in public and private sectors.

1.3.1. *Char*:

Char is a dry land usually surrounded by the waters of an ocean, sea, lake, or stream. Due to the normal course of the rivers in Bangladesh, accumulation of sediments of silt the *Char* land is formed. It is also formed by the erosion and accretion of sand bars in the river which is called "island *Char*s" and to the riverbanks called attached *Char*s [12] as shown in Figure -1.

Figure- 1: Left hand side picture shows "Island Char" and right hand side shows "Attached Char" in Bangladesh. Source: Banglapedia (National encyclopedia of Bangladesh).[13]

These *Char*s remain surrounded by water either entire year or few months.[12] These newly formed lands (*Char*s) become the places of dwelling of the people. As *Char*s are the most fertile land due to accretion of silt, settlers also find interest to reside there for agricultural crops production.[13]

1.3.2. Population, health and socio economic conditions in *Char* areas:

In 1993 there was about 631,000 people used to live on *Char*s. Jamuna *Char*s were setters for 65% of the *Char* dwellers. The *Char* population in 1993 represents a 47% increase over the population in 1984. With a population growth of 26%, it is estimated that currently there are over 6 million people live in *Char.* [12-13] The *Char* population are predominantly poorer than the mainland population.[14] The Monsoon (August and September) is the difficult period due to the incidence of generalized flood in *Char* areas. Among the Island *Char* dwellers 77% are extremely poor and 9% moderately poor.[12] Flood destroys their houses, crops, livestock and even their lives. As a result, food-insecurity, inadequate access to medical care and education, and joblessness severely affect their livelihood nature. Due to the erosion of their land and settlements they usually need to migrate to other places but they remain confined within the *Char*s usually. About one half (44%) of *Char* households lost livestock,

16% lost livestock and 10% lost land during the Monsoon months, compared with only 1.3% in general rural areas of Bangladesh.[14] "Water and sanitation condition in the *Char*s is very poor. Compare to rural household (29%) there is only 11% of households had a closed latrine in Char areas. More than three-quarter of the *Char* population do not have access to pure drinking water. The prevalence of diarrhea in both children (12.2%) and mothers (1.8%) were higher in the *Char*s compare to general rural population in Bangladesh (7.0% and 0.6%, respectively)".[14]Micronutrient malnutrition is also a serious health problem. The prevalence of maternal night blindness in the *Char*s was more than double the prevalence in rural Bangladesh (Conjunctival Xerosis 3.6% , X1A -2.0% , X1 B .9%.).[15] "The *Char*s are to be served by government services, but in practice it is not found. For example the low coverage of the measles immunization (45% in the *Char*s vs. 84% in rural Bangladesh) and outreach activities of Family Welfare Assistants (only 42% of *Char* households were visited during the previous 6 months vs. 70% in rural Bangladesh) indicates that the performance of immunization and health services in the *Char*s is poorer than on the mainland".[14]"Two thirds of the pregnant mother in Bangladesh receives antenatal care where as in Island *Char*s it is 30.6 %. About 97% of the child birth takes place in own house. Less than 50% of the children in between the age of 12-23 months are completely immunized ".[12]

Recently issue of poverty has been addressed by "*Char* Livelihood Project (CLP)" jointly implemented by the financial support of DFID and Bangladesh Government. Through this project different measures are taken to improve the life standard of *Char* people in northern part of Bangladesh.[16] In spite of taking measures in terms of basic health care, education and financial supports, no other initiatives have been taken to provide eye care services for the *Char* people except Deep Eye Care Foundation's initiatives for delivering eye care services for the *Char* people in Rangpur and Gaibandha districts with the assistance of ORBIS International. Rangpur (Figure-2) is one of the administrative district under which there are 8 Upazila / Thana with a total population of 2534365 (male 50.92%, female 49.08%).[13] The main river Tista flows across the north east boundary line of Rangpur district. So the maximum number of *Char*s is located across this zone Gangachara with a population 192336 (male 52.04%, female 47.96%)[13] is affected by flood and the poverty level much more than the other people live in other Upazila under Rangpur district. This Upazila (small administrative block under each district) is almost divided into attached *Char*s and Island *Char*s. The Gangachara Upazila consists of 10 unions, 73 Moujas and 123 Villages. Among these ten unions (Small administrative block under each Upazila) Kolkondo and Laxmitari union have maximum number of *Char* villages and our study was conducted in these two unions.

2. Rationale:

It was assumed that due to the poor socio economic condition of people living on *Char*s are very much prone to develop different non vision impairing diseases like Vitamin A deficiency ,lid margin inflammation, hay fever conjunctivitis, bacterial and viral infections of the conjunctiva, pterygium, mild refractive errors and mild cataract. The people who live in *Char*s are deprived of Primary Health Care services. Though some of the initiatives have been taken by some NGOs to develop the living conditions of the *Char* people but they are quite insufficient to address the huge burden. In the midst of great needs for health care, education, food and financial support, the eye care is observed as a negligible issue. But Primary eye care is one of the important components of health care due to the absence of which infant mortality rate, rate of blindness may increase which leads to increased poverty ultimately. Though the service need is felt by the *Char* people but due to its unavailability they often seek services from the traditional healers or Palli Chikishhak (Local village doctor) and local pharmacies. Due to wrong diagnosis or wrong medication ocular conditions often get worsen. More over the financial condition of the people do not permit them to seek the advices and treatment from the authentic service providers.

The study done on NVIC in a district of Pakistan showed the prevalence as 30.6%. It was done on village people who have got similarity socioeconomically with the rural people of Bangladesh. But as the *Char* people are more vulnerable to develop eye diseases than the rural people. So the prevalence is expected to be more among them. It is important to find out the magnitude of the diseases among the *Char* people because they are normally poverty stricken and if they are deprived from eye care that may lead them to extra problematic life. Due to having the NVIC and if it remains untreated their quality of life is difficult to improve even improving other indicators of life. The adult are more prone to develop Pterygium as they are more exposed to sunlight for their outdoor work pattern.[17] Generally the *Char*s are having less trees and exposure to sunlight or extra UV radiation may be cause of their Pterygium formation as it was recommended by Durkin, R *et al* and Gazzard, G *et al.* [17-18] But Pterygium is responsible for causing blindness as it was seen 2.2% of blindness among all the blind in the study done by Shane R Durkin in Central Myanmar.[17] It is also responsible for vision impairment by producing astigmatism.[17] Due to bad hygienic condition the people are prone to develop rhinitis and chronic rhinitis may lead to nasolacrymal duct obstruction.[5] Adult are more prone to develop the dacrocystitis.[19] In general among the age of 40 years and above, 90% of people both female and male are very much likely to develop Presbiopia. But due to unavailability of services and financial strain maximum of the presbiopic people are likely not to use presbiopic glasses for clear

near vision. To improve the economical status of the people some NGOs have taken the initiatives to start handicrafts activities like weaving and sewing. If the people engaged in the works were given presbiopic correction that can ensure the product qualities. A study done by Aravind Eye Hospital in India which had an evidence of major improvement in productivity through refractive error correction (mostly presbiopic) amongst industrial workers.[20] So in Char perspective it is important to give presbiopic correction for people involve in handicrafts by arranging refraction services and distribution of low cost or free spectacles. Due to poor sanitation and lack of pure drinking water especially during flood the children are prone to develop diarrhea which may lead them to Vit A deficiency. People use to move on bare foot. Children use dirty hands to eat and put fingers in mouth. They more prone to be affected by helminthes which lead them to develop anemia and mal nourished as well. Conjunctivitis is likely to be more common among the people because of their poor housing condition. The unavailability of the services is one of the causes of inclination to traditional medicine, which causes severe bad ocular conditions. The awareness level may be increased regarding eye care as it is felt that the education level is poor among them in comparison to other areas of population.

With the implementation of Primary health care integrating Primary eye care as one of the component may be helpful for the *Char* people. Primary eye care may be useful for them being prevented from blindness. As these people are very much poor so the Primary eye care should be made affordable to them .The purpose of this study was to determine the prevalence of NVIC in other rural places which also need eye care facilities at an affordable cost.

So the analysis and findings of this study provide first hand information to design appropriate interventions to deliver and promote community based Primary eye health services for *Char* population and elsewhere in Bangladesh. In addition, these will also provide information to policy makers, health care providers, and organizations working with *Char* population.

2.1. Aim of the study:

The aim of the study is to determine the prevalence and type of non vision impairing conditions (NVIC) amongst the *Char* population in Bangladesh to develop an appropriate Primary Eye Care Programme for the *Char* population.

1.2. Objectives:

- To document the prevalence and types of non vision impairing conditions (NVIC) in *Char* population.
- To identify the main causes of NVIC and its distribution by age and sex.
- To assess the available eye care services in the *Char* areas, identify the providers and their involvement in delivering eye care services in those areas, the health seeking behavior and barriers to eye care services among this population.
- To make recommendations for a suitable primary eye care programme to address needs of *Char* population.

3. Methods:

3.1. Study design:

The proposed study employed a cross sectional survey. Because this study was to assess the magnitude of Non vision Impairing conditions among the *Char* population with the main causes of NVICs in a short fixed time and within limited budget

3.2. Sample size calculation:

The sample size was calculated based on the study done in Pakistan within 95% confidence limits calculated using the performance estimation formula below [1]:

$$n = \frac{Z^2(1-\alpha)p(1-p)}{d^2}$$

In order to estimate an assumed prevalence of 30% with absolute precision of 5 percentage points (25% - 35%) for non-vision impairing conditions in all the ages, we would require 323 persons using two stage stratified cluster sampling.

In stage 1 – Clusters (village) was randomly selected within two Unions (Kolkond and Laxmitari each consisted of 15 and 10 villages respectively).

In stage 2: Random selection of 15 houses holds (4.7/ house hold) within the selected clusters.

Ten villages (clusters) out of 25 were randomly selected and 15 households within each selected village were examined to meet this sample size.

Therefore, adjusting for cluster design effect of 1.75 and a response rate of 90%, the final sample size was 705 persons.

3.3. Inclusion Criteria:

All residents of the union of all ages who has been living there for more than six months were included in the study sample.

3.4. Exclusion Criteria:

All non residents of the village and those who were absent on the third consecutive visit were excluded from the study.

A discussion was conducted with the community leaders and the elderly people of the areas for explaining the purpose of the survey and their cooperation. Informed consent was

obtained from each adult and from the head of each household if children were involved in the survey.

3.5. Study Site:

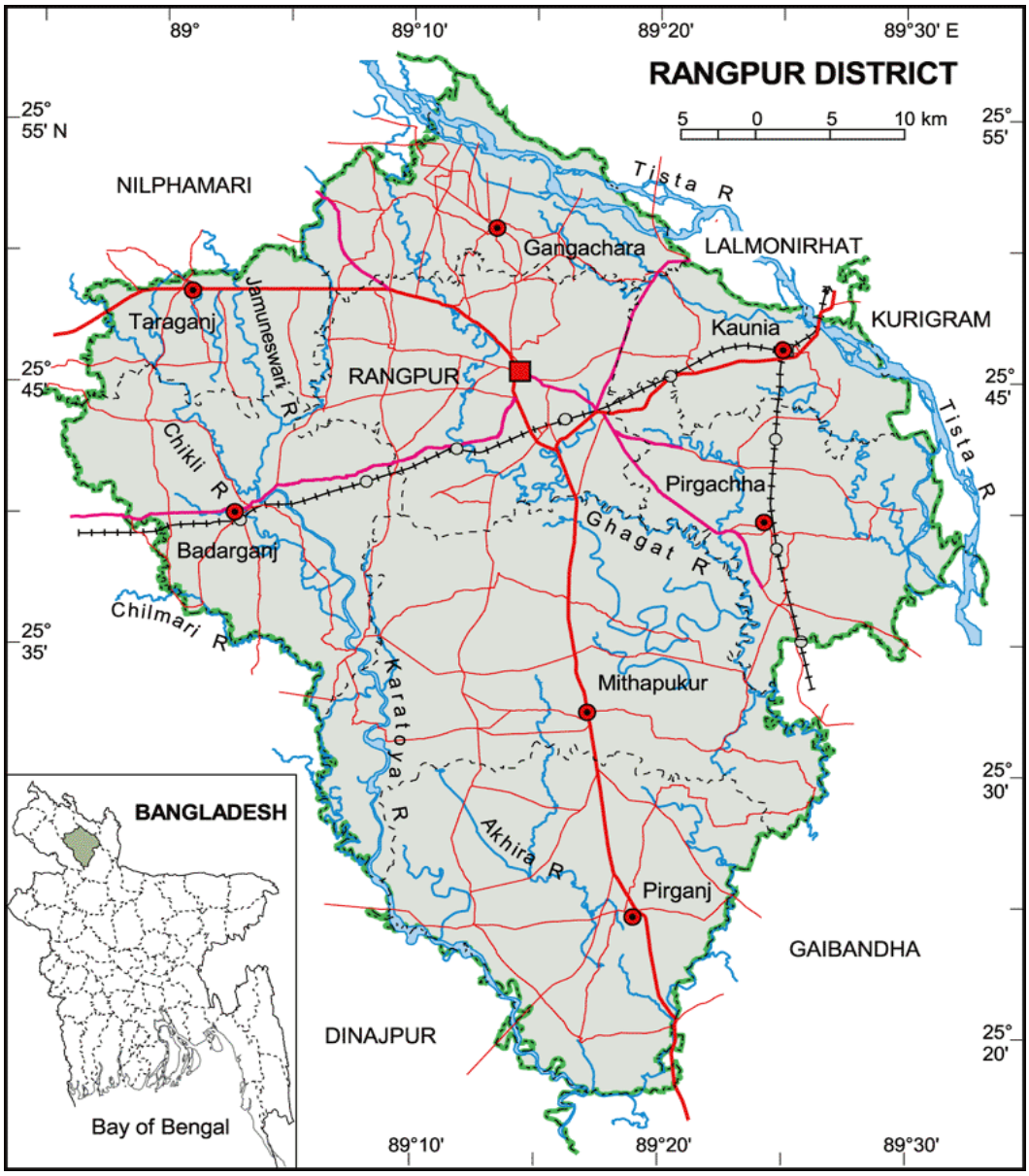


Figure -2: Map of Rangpur district of Bangladesh and showing study site at peripheral north side of the map (Source: Banglapedia- Encyclopedia of Bangladesh).[13]

Kolkond and Laxmitari union under Ganga*chara* Upazila of Rangpur district (Figure -2 Map of Rangpur district) with highest number of *Char*s 24were selected as the study sites each union had 15 and 10 villages respectively. The Kolkond union had a population 0f 31580(male 17320, female 14260) and Laxmitari had 20661 (male 10704, female 9963). The two unions had total population of 52241 among which 53.6% is male and 46.4% female with literacy rate almost 32.0%. In Kolkond union there were 6560 households and the

distance between the households was 300 m to 1 km. There are 9 wards. In Laxmitari union there were 4518 households which were 300 m to 1 km distant from each other. 99% houses are made of bamboo and mud. The average house hold size is 4.7. These two *Char*s were almost 20 Km away from the district town with poor communication facilities.

3.6. Mapping and numbering of the house hold:

With the help of local people and available map found at Union Parishad a map was drawn for each selected village. Thus 10 maps were prepared. In each map household was numbered and by generating random number 15 households were selected. From each village a volunteer with good information about the village was recruited in study team. The volunteer and one of the organizers from the study team marked the household for easy identification during study shown in figure- 4

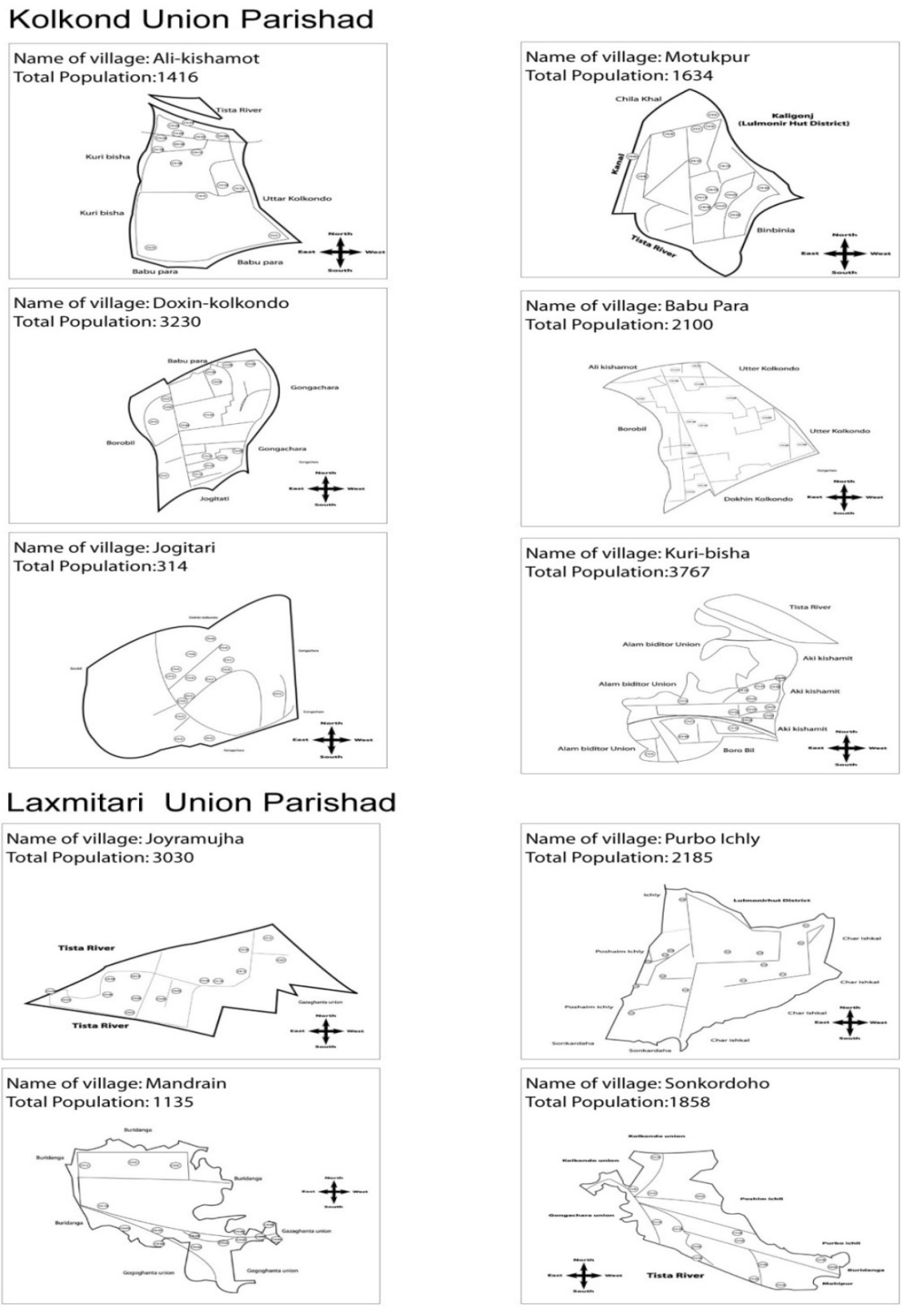


Figure-3*:* Shows 10 villages under Kolkondo and Laxmitari unions with demarcated household's numbers generated by computer for study. Maps are drawn by hand and later were put into pdf format. The round shapes indicate the locations of households with number.

Study team*:* One ophthalmologist, two ophthalmic assistants, two field organizer and a per time data operator from Deep Eye Care Foundation were selected to form the study team. All the participating staffs were given training before the study starts. Avoiding bias while recording the data, clear understanding the variables and maintaining the uniformity were key issues of training. For collecting data a standard format of questionnaire was developed.

3.7. Logistics used for examination

Following instruments and materials were used

1. Hand held portable slit lamp, of Zeiss
2. Head mounted magnifying loop (X 2.5)
3. Direct Ophthalmoscope
4. Torch
5. Portable Generator
6. Snellen's *Char*t E type to be used from 6 meter distance.
7. Near vision *Char*t
8. Measuring tape
9. Data collection form.
10. Prescription pad and referral slip for cataract patients.
11. Drugs to provide to disease affected people.

3.8. Time of Examination:

From 12 July' 2010 to 24 July'2010

3.9. Examination Procedure:

Through piloting the study among 10 households the difficulties were discussed later and accordingly the questionnaire was reorganized. The field organizers collected the data to fill in the questionnaires. They used local language (Bangla) during conversation and collecting data. Each question was asked in Bangla (Language of Bangladesh) and then filled in the form in English. If it was perceived that the respondents were finding difficulties to understand any questions it was made clear to them first.

At first step the residents of the households were briefed about the aim and objectives of this study and their right and cooperation to participate in the study. Then written consent was

obtained from the guardian or head of each household. All the members of that household were examined. First the visual acuity was checked by E type Snellen chart from 6 meters of distance. The participants who could not see 6/18 or more were given pin hole. If improved to 6/18 or better were taken in the category of mild refractive error. From the age of 37 years the participants were asked to see the near vision *Char*t. Who could not see N/8 was categorized having presbiopia in both eyes. Conjunctival congestion with purulent or muco purulent dis*char*ge was taken as conjunctivitis. Any fibro vascular growth from nasal or temporal canthus crossing limbus was considered as Pterygium. Matted eye lashes with regurgitation on pressure over sac were considered as chronic dacrocystitis. Bitot's spot, history of guardian about difficulties in movement at night with dryness of the conjunctiva was considered as Vitamin A deficiency Disorder (Vit A deficiency). Any non tender palpable swelling in either lids was taken as chalazion and painful swelling with sign of inflammation of lid was considered as stye. Hemorrhage under conjunctiva without the history of trauma was considered as sub conjunctival hemorrhage. A white scale along the lid margin with or without sign of inflammation was considered as blepharitis. Absence of tear film along lower lid margin was taken as dry eye. From each respondent information on age, number of house members, education level was collected according to questionnaire. Ownership of land, information on health seeking behavior, health service facilities and eye care facilities were asked. In case of children information were collected from their parents or guardians.

The children below the age 5 years and mentally retarded person's visual acuity could not be recorded and were categorized into "not recordable". Each person of the household were examined by hand held slit lamp or loop (Figure -4).

Figure - 4: Examination of eyes using slit lamp and Head loop at different households in Char areas of Gangachara Upazila under Rangpur distinct of Bangladesh.

3.10. Ethical Issues:

Ethical permission and approval was obtained from Bangladesh Medical Research Council (BMRC), Bangladesh.

The ethical committee of London School of Hygiene and Tropical Medicine had provided the approval for the study.

The confidentiality of all participants taken part into this study was kept protected to the extent possible. All interviews were conducted in private, and all study related information has been stored securely by the investigator.

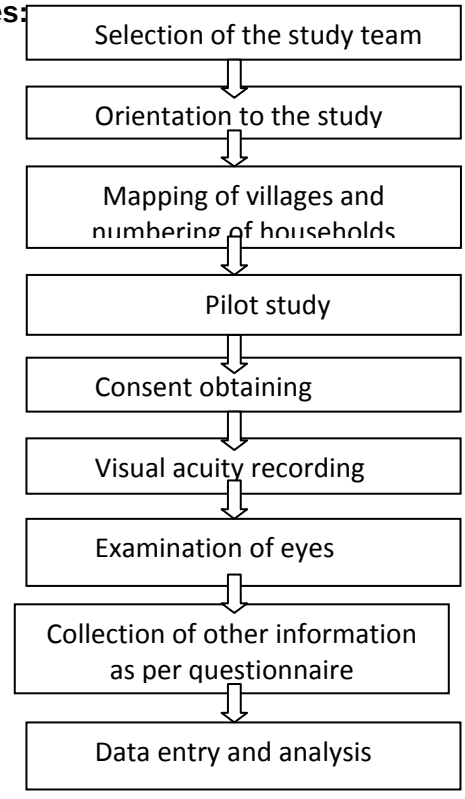
Informed consent was obtained without coercion or misrepresentation of the potential benefits or risks that might be associated with participation in the study. Informed consent encompassed all oral or written information given to the participant about the study. All such information that was given to the participant was in a language understandable to him. Informed consent was documented on a written consent form that was signed or thumb printed by the participant. The original signed consent form for each participant has been kept in a study file. The main consent form of this study was in Bengali.

Participant's right to withdraw: The participant had the right to withdraw from study participation at any time without providing any reason.

3.11. *Data collection and Analysis:*

Data were collected in prepared questionnaire and everyday during the study the collected data were entered in data base formed in Access. It was analyzed by STATA at LSHTM.

3.12. Flow *Chart* of Activities:



4. Results

4.1. Response rate:

Table-1

Union	No	Vill : Name	Total Pop	Enumerated	Examined	Response
Laxmitari	1	Purbo Ichly	2185	71	69	97.1
Laxmitari	2	Sonkardho	1858	70	68	97.1
Laxmitari	3	Mandrain	1135	76	75	98.7
Laxmitari	4	Joyramujha	3030	69	69	100.0
Kolkondo	5	Ali Kishamot	1416	70	69	98.6
Kolkondo	6	Babu Para	2100	67	66	98.5
Kolkondo	7	Dokhin	3230	71	67	94.4
Kolkondo	8	Jogitari	314	73	72	98.6
Kolkondo	9	Kuribisha	3767	74	73	98.7
Kolkondo	10	Motkupur	1634	69	67	97.1
Total	10		20669	708	695	98.2

A total of 150 households were visited under two unions (Kolkond and Laxmitari) in 10 villages. Total 708 people were enumerated for study of all ages. Average house hold size was 4.7 persons. A total 695 subjects were examined. The response rate was 98.2% (95% CI 96.9 - 99.02%).The people who did not want to participate or not found present at house were not examined and reported as missing (1.8%).

4.2. Distribution of study population according to age group and gender:

Table -2

Age	Female	Percentage *(95%CI)*	Male	Percentage (95% CI)	Total	Percentage 95% CI
<=16	135	*19.07 (16.1-22.2)*	133	*18.79 16-21.7*	268	*37.85 34.3- 41.5*
17-39	138	*19.49 16.6-22.6*	100	*14.12 11.6-16.9*	238	*33.62 30.1- 37.2*
40+	90	*12.71 10.3-15.4*	112	*15.82 13.2-18.7*	202	*28.53 25.2- 32.0*
Total	363	*51.27*	345	*48.73*	708	*100*

Table -2 shows that among the study population 37.85% was below the age of 17 years which was highest representing population. Next to that people in between the age 17-39 years (33.62%) and 40years or above was the least. Female participants were 51.27% and male 48.73 %.

4.3. Prevalence of Non Vision Impairing Ocular Conditions*:*

Table -3

NVIC	Affected	Percentage in population	95% CI
Presbiopia	158	22.32	19.3-.25.6
Mild refractive error	23	3.25	2.1-4.8
Vit A deficiency	17	2.4	1.4-3.8
Conjunctivitis	18	2.5	1.5-4.0
Chr Dacrocystitis	4	0.6	0.1-.1.4
Pterygium/Pingueculae	3	0.4	.08-1.2
Blepharitis	6	0.9	0.3-1.8
Dry Eye	1	0.1	00- 0.7
Chalazion/Stye	2	0.3	00-.1.0
Sub cong Hge/ Others	3	0.4	.08-1.2
Total	235	33.2	29.7-36.8

Among total study population 33.19% people were affected by different NVICs either in one eye or both eyes. Among all the NVIC presbiopia was the main cause affecting 22.3% of total population (CI 19.3-25.6%).Mild refractive error was found in 3.25% (CI 2.1-4.8%)of population. Next to refractive errors Vitamin A deficiency and conjunctivitis were the causes of NVIC affecting 2.4% and 2.5% of population. Four diseases were the main bulk of NVIC (92.0%). A total of 19 people (2.7%) of the study population were found affected by chronic dacrocystitis (0.6%),pterygium/ pingueculae(0.4%) ,blepharitis(0.9%),dry eye(0.1%), chalazion/ stye (0.3%) and sub conjunctival hemorrhage(0.4%) .

4.4. Distribution of NVICs among the study people according to age group:

Table -4

NVICs	<=16 yr	17-39 yr	40+ yr	Total	Percentage
Presbiopia	0	23(14.6%)	135(85.4%)	158	22.32
Mild refractive error	0	4	19(82.6%)	23	3.25
Vit A deficiency	16(94.1%)	1	0	17	2.4
Conjunctivitis	14(77.8%)	4	0	18	2.54
Chr Dacrocystitis	1	2	1	4	0.56
Pterygium/Pingueculae	0	2	1	3	0.42
Blepharitis	1	4	1	6	0.85
Dry Eye	1	0	0	1	0.14
Chalazion/Stye	1	1	0	2	0.28
Sub cong Hge/ others	1	1	1	3	0.42
Total	35	42	158	235	33.19

Table -4 shows that presbiopia is the commonest cause of NVICs and the population at or above the age of 40years mostly suffer from this (85.4% of total presbiopic cases). Excluding presbiopia mild refractive error is the second cause of NVICs as in our study it has included the people with mild lental opacity above age group of 40 years. Vitamin A deficiency disorders came next to conjunctivitis. People suffering from conjunctivitis with mucoid and muco purulent discharge were considered to have conjunctivitis. Conjunctivitis was more common among the children (<= 16 years) (77.8%). Vit A deficiency was found in 2.4% cases especially in the children group. Conjunctival xerosis, Bitot's spot, mild corneal opacity without the history of trauma and history of night blindness were the basis of Vit A deficiency. Blepharitis was found in 0.85% of people. Chronic dacrocystitis was found among 0.56% of population. Pterygium and Pingueculae was found in .42% cases. Subconjunctival hemorrhage was found in 0.42% cases. Chalazion was found in 0.28% and dry eye was seen in 0.14% of population.

4.5. Distribution of NVICs in different visual acuity level:

Table -5

NVIC	<3/60	3/60-<6/60	6/60-<6/18	6/18 and better	Could not be tested	Total
Presbiopia	0	0	17(10.8%)	141(89.2%)	0	158
Mild refractive error	0	0	14(60.9%)	9(39.0%)	0	23
Vit A deficiency	0	0	0	16(94.1%)	1	17
Conjunctivitis	0	0	0	14(77.8%)	4	18
Chr Dacrocystitis	0	0	1	2	1	4
Pterygium/ Pingueculae	0	0	0	3	0	3
Blepharitis	0	0	1	5	0	6
Dry Eye	0	0	0	0	1	1
Chalazion/Stye	0	0	0	2	0	2
Sub cong Hge/ others	0	0	0	2	1	3
Total	0	0	33(14.0%)	194(82.6%)	8	235

Those who suffered from NVICs 82.6%% had vision of 6/18 and better. Presbiopic people were 89.2% of total people had suffered from presbiopia. In less than “6/18 to better than 6/60” group there were 14.0% people and among the people who had refractive error 60.9% were in this group who were improved with pin hole to 6/18 or better and 39.0% people with mild refractive error were in “6/18 and better” group.

4.6. Proportion of people affected with NVICs had received treatment:

Table -6

NVIC	RX Not Received with %	RX received with %	Total
Presbiopia	143 (60.9%)	15(6.4%)	158
Mild refractive error	21 (8.94%)	2(0.9%)	23
VIT A DEFICIENCY	17 (7.2%)	0	17
Conjunctivitis	15 (6.4%)	3 (1.3%)	18
Chr Dacrocystitis	4 (1.7%)	0	4
Pterygium/Pingueculae	3 (1.3%)	0	3
Blepharitis	4 (1.7%)	2(0.9%)	6
Dry Eye	1 (0.4%)	0	1
Chalazion/Stye	1 (0.4%)	1 (0.4%)	2
Sub cong Hge/ Others	1 (0.4%)	2 (0.9%)	3
Total	210 (83.4%)	25 (10.6%)	235

Among the affected people only 83.4% people did not seek any treatment. People who received treatment 6.4% received treatment for presbiopic correction. Those who were suffering from VAD did not seek treatment but people suffered from subconjunctival hemorrhage were more conscious about treatment.

4.7. Reasons for not receiving treatment:

Table -7

Reason	Number	Percentage
Financial related matters	129	54
Lack of willingness for treatment	69	28.9
Did not know about disease	38	16
Fear	2	0.8
Lack of information	1	0.4
Total	235	100

Financial circumstances were found to forbid 53.97% people not to seek services. Another 15.9 % people reported their low awareness level about eye diseases. But 28.9% people were not interested for treatment and it happened due to financial issues and giving less importance on eye diseases.

4.8. Health seeking behavior:

Table -8

Treatment seek from	Number	Percentage
Upazila health complex	317	44.8
Palli Chikishhak (Village doctor)	313	44.2
Medical College	48	6.8
Local pharmacy	9	1.3
NGO Eye Hospital	2	0.3
Others	6	0.9
Absent	13	1.8
Total	708	100

For treatment 44.77% people used to seek services from Upazila health complex which is government hospital. Maximum Upazila hospitals do not have eye care service facilities. But 44.21 people are depended on Pallichikasshak (definition/ describe). A total of 13 people did not participate in study.

4.9. Availability of health care facilities.

Table -9

Type of health care	Type of services	No of people know about services	No of people don't know about services	No response	Total
Primary health worker visit	FP and Immunization	468	227	13	708
Eye worker visit	Eye treatment, refraction & cataract screening	110	585	13	708

Among the respondents 66.1% could tell about the Health Worker visit at their places who usually talk about health care, family planning material distribution and EPI coverage.

Among all the participants 82.62% answered that there is no eye care service facilities at their areas and 15.54% answered that they had the opportunity of getting eye care services at places due to some NGO eye care service providers outreach activities. A total of 13 people were absent in the study.

4.10. Relationship of NVIC to socioeconomic conditions of the study people:

Table -10

Variables		Total diseased population	Total non-diseased population	Percentage of affected people in total population with (95% CI)	Odds Ratio	P- value
Gender	Male	123	222	*17.4 (14.7-20.4)*	1 (Baseline)	-
	Female	112	251	*15.8 (13.2-18.7)*	1.24 (0.90 - 1.72)	0.176
Age	≤16	35	233	*4.9 (3.5-6.8)*	1 (Baseline)	-
	17-39	42	196	*5.9 (4.3-7.9)*	0.70 (0.42 - 1.17)	0.152
	≥40	158	44	*22.3 (19.3-25.6)*	0.04 (0.02 - 0.07)	<0.0001
Education level	Illiterate	152	174	*21.5 (18.5-24.7)*	1 (Baseline)	-
	Primary	46	164	*6.5 (4.8-8.6)*	3.11 (2.07 – 4.71)	<0.0001
	Above primary	37	131	*5.0 (3.7-7.1)*	3.09 (1.98 – 4.84)	<0.0001
Occupation	Housewife	74	95	*10.5 (8.3-12.9)*	1 (Baseline)	-
	Student	20	148	*2.8 (1.7-4.3)*	5.76 (3.20 – 10.47)	<0.0001
	Jobless	25	95	*3.5 (2.3-5.2)*	2.96 (1.68 – 5.24)	0.0001
	Farmer	62	35	*8.8 (6.8-11.1)*	0.44 (0.25 – 0.76)	0.002
	Help HH work & Agr*	33	54	*4.7 (3.2-6.5)*	1.27 (0.73 – 2.24)	0.369
Own living land	No land	119	335	*16.8 (14.1-19.8)*	1 (Baseline)	-
	Have land	116	138	*16.4 (13.7-19.3)*	0.42 (0.30 – 0.59)	<0.0001
Own Agri land	No land	139	381	*19.6 (16.8-22.8)*	1 (Baseline)	-
	Have land	96	92	*13.6 (11.1-16.3)*	0.35 (0.24 – 0.50)	<0.0001
Monthly expense for basic needs	<Tk 3000	37	89	*5.0 (3.7-7.1)*	1 (Baseline)	-
	Tk 3500-6000	181	347	*25.6 (22.4-28.9)*	0.80 (0.51 – 1.24)	0.293
	Tk 7000-10000	17	37	*2.4 (1.4-3.8)*	0.90 (0.43 – 1.91)	0.778

Table -10 shows gender is not found to be significantly associated with NVIC. Individual having age more than 40 years have nearly 0.04 odds of developing NVIC compared to individuals aged less 16 years. According to study people with primary and above primary level of education are more likely get NVIC compared to illiterate people. Students have nearly six times odds of developing NVIC compared to house wife. Same is to for jobless and farmers. Participants with own living and agricultural land are less likely develop NVIC compared to those having no land. Monthly expenses for basic needs are found to be not associated with NVIC.

5. Discussion:

In this cross sectional study the population taken compared well with the national census data in which the male female ratio was 1.07:1.0.[21] The frequency and distribution of the study population in the different age group was almost similar to the national standard [22]. The response rate was 98.2% which was higher than expected. Most of the people were interested in being examined and it so happened that people had the opportunity to get their eyes examined by any ophthalmologist for first time. Even the people who were not found present at home and had been working nearby places, after getting the information of our arrival came to participate in the study with enthusiasm.

Due to scarcity of data especially on NVIC, the findings of this study were difficult to compare at national perspective. In "Bangladesh National Blindness Survey 2000" prevalence of Visual acuity <6/12 due to refractive error was 18.87% at or above the age 30 years [23]. In our study the mild refractive error was found in 3.25% population. It was low due to including all ages and children below the age of 6 years (13.1%) were not visual acuity tested. In the national blindness survey an autorefractometer was used to measure the refractive status and the study was limited to persons above the age group of 30. In that age group refractive errors are common. In a study Raju *et al* have shown that the prevalence of refractive error increases with increasing age. [24]

The prevalence of presbiopia in our study was 22.3% which was 67.3% of total NVIC. However if presbiopia was excluded the prevalence of other NVIC would be 10.9%. A work on NVIC done in Pakistan by Hussain. A *et al* [1] and in Uganda by Kamali *et al* [2] the most common NVIC that was found Presbiopia 53.6% and 48% respectively. In our study it was 67.2% among people affected with NVIC. Due to participation of 97.2% people at or above the age 40 years the result differed from the findings of them. In Pakistan study 22.9% people were 30 years and above, but it was 28.5% in our study. So comparing the participants in two studies our finding was also significant.

In our study conjunctivitis was found in 2.5% of the population but in Pakistan study it was 12.7% for allergic and 11.5% for infective or bacterial conjunctivitis. [1] In Uganda study it was 20% and 8% respectively.[2] In our study we were strict on diagnosing conjunctivitis depending on conjunctival congestion with mucoid or muco purulent discharge only. Though most of the people complained of ocular itching and we did not count it as allergic conjunctivitis. During the study period we found the *Char* people working in the field even while raining, washing jute stalk in the polluted / contaminated water, the children used to take bath in the contaminated water which might evoke itching sensation in their eyes. Moreover in many cases it was not possible to use slit lamp to see the follicular or papillary

reaction of the conjunctiva which also reduced the prevalence of conjunctivitis. A total of 14 children (5.22% of total population) were found to have conjunctivitis [OR=3.22, CI=3- 9.1 p=0.032] which showed that children below the age of 17 years had a strong association of being affected by conjunctivitis.

There was a significant finding in Vitamin A deficiency disorder among the children below the age 17 years. A total of 16 children (2.26%) (95% CI 1.3 -3.4) among all the population were found to have Vit A deficiency in a form of either conjunctival xerosis or Bitot's spot. Hussain,A *et al* showed in his study that Vit A deficiency accounted for 2 per 1000 of population.[1] Hill showed that in rural Bangladesh the prevalence of XN -3.6%, X1A- 2.0% and X1B- 0.9%.[15] Food habit of consuming only rice might be one of the major causes of Vit A deficiency. [25]. More over among the *Char* population the general hygienic condition is very poor. Frequent diarrhea, acute respiratory tract infection, poor immunizations are the common predisposing factors for Vit A deficiency prevail in *Char* areas. [12] As a result it was likely of prevailing Vit A deficiency in Char areas higher than urban Bangladesh. A study on outreach eye care programme in Zambia, it was noticed that 14% children had xerophthalmia [26]. Zambia and Bangladesh shares almost same economical situation. The Char population is more vulnerable to diseases. In our study 6% among the participating children were affected Vit A deficiency. With the extensive coverage of immunizations the incidence of Vit A deficiency has decreased throughout Bangladesh. But it has been persisting in higher rate in poverty stricken areas. In a nutritional surveillance project bulletin it was mentioned that due to micro nutrient malnutrition Vit A deficiency in the *Char*s was more than double the prevalence in rural Bangladesh.[14] In our study only one case was found with Bitot's spot in a person of 17 years which may be other conjunctival degenerative changes needed further investigations. Though Vit A deficiency has been considered as a NVIC but definitely it deserves importance like other diseases causing blindness.

Chronic dacrocystitis was found in four people with a prevalence rate of 0.56% (95% CI 0.1-1.4%) usually associated with a purulent discharge This finding was comparable with Pakistan study which was 1% (95% CI .5-1.52%).

Among all NVIC 14.9% were found in children similar to Pakistan [1] and Zambia [26] study which were 12.3% and 14% respectively. Children are more prone to develop conjunctivitis, refractive errors [26]. Table-10 shows that both "17-39" and "≥ 40" categories had odd ratios of 0.7(CI 4.3-7.9%) and 0.04(CI 19.3-25.6%) respectively and there was a statistically very strong association found between age" ≥40" and "≤ 16" (p=< 0.0001) of having disease.

In the older age groups, presbiopia, pterygium/pingueculae and refractive error were common. Presbiopia alone was the most common cause of NVIC. In our study pterygium/ pingueculae occurred in 0.42% of total study population. Though the study carried in central Myanmar having almost same weather and geographical scenario by Durkin *et al* [17] ; prevalence of pterygium was found in either eye 19.6% or both eyes 8% among the people of 40 years and above. In another study Singh *et al* found 5.2% of pterygium prevalence among the elderly population above 50 years of age in rural part of central India.[19] Another study done by Gazzard *et al* in Indonesia also found that prevalence of any pterygium was 10.0% and bilateral was 4.1% among the adults aged 21 years and above.[18] In our study due to including all ages of people the result on pterygium/pingueculae prevalence might be underestimated. Pterygium is commonly seen in long time outdoor worker who are exposed to sun light more and also elderly people.[17] In this study female and children were comprised 70% of study population who used to be exposed to sunlight less due to engaging them in house works. So it is another reason to decrease the prevalence rate at low. It was also stated in Singh study that in India prevalence of pterygium was observed from 0.075% to 10.4% in different studies [19].

Blepharitis was found in 0.9% of population and 97.7% of *Char* population who used to live in Kaccha Bari (House made of mud and bamboo).During the monsoon the overall hygienic condition of the houses is very poor. Poor hygienic condition is responsible for developing blepharitis.

Non traumatic subconjunctival haemorrhage was taken as NVIC in this study because people often found afraid of this condition on which they liked to give priority rather than blindness sometimes. So this must be considered as a public health problem and needs counselling. A total of three people (0.42%) were found to have sub conjunctival haemorrhage.

Of all NVIC 82.6% were found in those who had a visual acuity of 6/6 to 6/18 and people with NVIC and vision less than 6/18 was 14.0% .In Pakistan study it was 85.7% and 11.1% respectively[1] which were almost similar to our study. The other NVIC except mild refractive error were not responsible for causing decreased visual acuity. As a reason it was included as NVIC. In our study 25 people were found to have cataract that did not improve their vision to 6/18 or better with pin hole. The prevalence of blindness due to cataract was 3.53% (CI 2.3-5.2%). All the people with cataract were found above the age of 40 years. According to "Bangladesh National Blindness Survey 2000" the prevalence of bilateral blindness was 1.53% among the age group of 30 years and above. [23, 27] Cataract was the predominant

cause of blindness accounting 79.6%. [23, 27] In that survey the borderline of vision counted for cataract blind was ≤ 3/60. [23, 27] In our study the visual acuity was noted in case of cataract patients less than 6/18. More over due to scarcity (82.62% people stated that there was no eye care service) of eye care services the prevalence of cataract was expected higher. It was measured in small number (708) of people. This prevalence was significant for health care service's priority in *Char* areas.

Among the affected people with NVIC only 10.64% received treatment. Financial strain caused 53.97% not receive treatment. Lack of interest for treatment was 28.9% and 15.9% was not aware that they had the disease. Those who received treatment 60% of them were presbiopic. In study carried at Chakaria, a rural area of Bangladesh on diseases affected people; it was observed that 47% of patients sought treatment for their illness and those who did not received treatment 51% felt no necessity of treatment, 40% did not have enough money to consult with health care provider.[28] "Nodi o Jibon" a policy paper also showed that 38.0% of people in *Char* areas did not receive any treatment for any disease due to poverty, 17.0% due to negligence and 14.4% perceived the disease to be minor.[12]
In this study 44.77% of *Char* people were found to depend for health services on Upazila Health Complex and 44.21% on Palli Chikishhak(Village Doctor).In Chakaria study it was found that around 65% of the patients consulted village doctors at some of point of treatment. [28] In "Nodi O Jibon" 69.1% of *Char* people depended on quack doctor (village doctor/ Palli Chikishhak) and 14.1% seek treatment from qualified doctor [12]. In our study area due to the presence of "Gangchara Upazila health complex" (A government health complex with qualified staffs) within near vicinity of the *Char* people; health seeking behaviour from Upazila health complex among the people was higher than other studies.

As part of the primary health care field level health workers usually visit every house for family planning, immunization, and antenatal check up in every rural part of Bangladesh. Among the *Char* population only 66.1% people reported about their visit. According to "Nodi O Jibon" 69.4% pregnant mother did not received ante natal care, complete immunization coverage was 48.7% where in other rural part of Bangladesh it was 44.1% and 73% respectively. [12]

In our study variation of diseases depending on gender was not observed significantly. The Odds ratio of female was [0.9-1.72, (CI 13.2- 18.7%)] which showed no significant statistical value. But education level of both primary and above primary level had the odds ratio of 3.11 (CI 4.8-8.5%) and 3.09 (CI 3.7-7.1%) respectively which showed very strong association of NVIC (p=<0.0001). Though the educational level do not have any direct effect on NVIC but

increasing level of education of the community may play role in designing primary eye care through community participation [29].

The students who were almost below the age of 17 years and jobless who were older people had the odds ratio 5.76 (CI 1.7-4.3%) and 2.96 (CI 2.3-5.2%) respectively. There were statistically very strong association found to develop diseases among these two groups (p=<0.0001 & 0.000024 respectively).Study carried out in Nepal on the morbidity of ocular diseases among the school children showed students aged 5 to 16 years 34.2% had some form of ocular disorder [30] and another study in Nepal found that 11% of their school children had ocular morbidity which were preventable or treatable. [31]

Findings from two other studies and our study showed that children had a higher possibility of being affected by different forms of diseases. “In study of ocular morbidity among elderly population in a rural India the morbidity rate of eye was 1.21 lesions per elderly person. The number of ocular lesions was found to increase significantly from 1.08 per person in the 50 to 59 years age-group to 1.88 per person in the 80 to 89 years age-group (r=+0.47; p<0.001)” [19]. This study also found the” prevalence of ocular diseases increased significantly among individuals from upper and middle socio-economic status to those belonging to lower socio-economic status (p<0.001) similarly, landless laborers suffered from eye diseases more often (89.8%) than other occupational groups (81%) (p<0.001)” [19]. These findings are similar to our study.

Constraints of the study:

The study team headed by an ophthalmologist used to move from the hospital (Deep Eye Care Foundation) around 6 o’clock in the morning by motorbikes. Almost all the study village had a distance more than 20 km from the hospital. Before starting from hospital all the logistics for study were checked. The team used to reach in the study villages by 7 o’clock in morning and worked to collect data up to 7 o’clock in the evening. The presence of all family members was observed highest during morning and evening. In case of missing any family member during day time it was possible to get that person in the evening. No prior information was given to villagers about the visit. In case of Island *Char* villages the team had to cross the river by country boat which was sometimes 30-45 minutes journey and carrying all the bikes on boat. The households numbered before were visited accordingly.

Char is the remote area where communication system is very poor. The main vehicle used there are bicycle, horse cart and mainly boat. In maximum *Char* there is no electricity supply. Very few households use solar panel as source of electricity. During our study period it was raining almost every day as that was monsoon season in Bangladesh. So it was not possible to carry the slit lamp every day. In some villages we carried portable generator to use slit

lamp. But In some villages there were no road to reach households. So there was no van to carry the weighty luggage. We had used the magnifying loop (X2.5) to examine the eyes. So we apprehended that for not using the slit lamp we might have missed to diagnose some cases with type of conjunctivitis, dry eye and mild lens opacities. To reach the household we had to walk through paddy field inundated land carrying all the logistics on our shoulder and in hands. It was really difficult to save the logistics in the rain. The distance between the each studying household was almost 400-700 meters. So the team had to walk a lot to visit each household throughout whole day. In some villages some of the roads went under water. It happened so frequently that in the morning we crossed the road, but while returning back in the evening there was no existence of road as it had gone under water due to current of river. So coming back with motorbikes was major concern some times during our study. Some of the roads were broken and bamboo made bridges was constructed over them. Crossing these bamboo bridges was also difficult and dangerous.

In some villages the people saw any medical team first time talking on eye treatment or observing eyes. So there was crowd around the team in every village and some disease affected people came to seek treatment. Most of them were female, older people and children. Some antibiotic and anti allergic eye drops were distributed free among them. All cataract patients were referred to Deep Eye Care Foundation for surgeries at free of cost. So people suffering from eye problems were interested to be attended by us and there were some possibilities of bias as there was chance of showing a diseased person of other household as the member of our study household. Most of people were examined outside of their room because the majority of the households had one room for living with very narrow space. Due to the privacy issue some of the heads of households were not interested to allow us to enter into their only one living room. So there was less space to go for retinoscopy in case of ascertaining refractive error. In our study we could not do refraction of the people found to have poor visual acuity.

6. Conclusion:

Non Vision Impairing Ocular Conditions (NVIC) are not considered to be a serious public health problem but nevertheless impact on health issues by decreasing quality of life. In this study highest prevailing disease was presbiopia being 67.23% and refractive error 9.8% of all NVIC which were mainly responsible with vision for near and distant. Both types of vision are important in daily life to pursue jobs with satisfaction. Vit A deficiency which was 7.23% in NVIC is a public health issue [15] and needs attention both at community and national level. Conjunctivitis was found to be 7.26% which was also an important finding for the community people. Not all NVIC were included in VISION 2020; a global initiative for eradicating avoidable blindness by Year 2020. But to achieve that target of VISION 2020 treating NVICs falls in parallel task as these diseases may cause blindness in long run. Deprivation from health care services increases the poverty risk for any community. “Bangladesh has showed good performance in some areas e.g. hunger, enrollment in primary education, gender parity in primary and secondary education, reducing child mortality and improving immunization coverage and improved drinking water in achieving the Millennium Development Goal (MDG) but still people living in coastal and Monga (Drought) affected districts are below poverty line” [32] where usually the *Char* people find their shelters. Poor existence of Primary Health Care (PHC) facilities for the downtrodden people of *Char* areas has been added as one of the major causes of poverty. Due to absence of Primary Eye Care (PEC) services has caused another misery for them. To develop socio economic condition of the *Char* people it is essential to establish effective PHC integrating PEC as its component. Most of the activities of PEC includes prevention, treatment and referral are the tasks of primary health workers.[33] So it is an important task for ministry of health to adopt a comprehensive PHC system through which PEC facilities may be available for the *Char* community. National policy makers may take initiatives to implement an effective health delivery system for disadvantage community and thus stepping forwards to achieving the targets of both MDG and VISION2020.

7. Recommendation:

To establish an effective eye care service for the *Char* population and hard to reach people of Bangladesh following recommendations may be followed.

Immediate steps to combat prevailing eye problems:

1. Activating existing primary health care activities at root level and strong monitoring of field activities by Upazila and district level administration.
2. Existing health care workers should be given more responsibilities to distribute Vitamin A capsule among all the children.
3. Distribution of anti helminthes drug among the children by the primary health workers as a measure to correct anemia.
4. Negotiation with the private eye care service providers to render eye care services at Char areas by extending outreach activities.
5. Free distribution of water purifying tablets, oral rehydration saline among the villagers.
6. Privilege of free cataract surgeries for the cataract blind people in the Char areas by private eye care service providers and if possible at district government hospital.
7. Free antibiotic eye drops or ointment distribution among the villagers who are suffering from bacterial conjunctivitis.

Along with the above steps both short and long term strategies should be adopted in order to implement effective primary eye care services for the Char population:

A. Short term Strategy:

1. Strengthening existing health facilities at grass root level by allocating appropriate number of human resources in the districts where Chars are located.
2. Strengthening monitoring system of the health workers and distribution of drugs at Upazila and district level administration.
3. Extra monitory benefit for the health workers for their extensive field trips in the Char areas.
4. There are huge gap in health sector of Bangladesh in between human resources and demand. It is not possible to produce adequate physicians and health workers within few years. In this situation existing unqualified health service providers like Pallichikasshak / Village doctors, Kobiraj ,Quack doctors who are closed to the villagers may be trained on basic management of very common eye diseases.[28]

5. Advocacy with international donors like DFID who are funding in Char development for integrating eye care services in health service packages.
6. Introducing monitory support for Char people by demand side financing system for eye care.
7. Free spectacle distribution among the Char population after refraction.
8. Free treatment facilities at secondary and tertiary level of eye care services for Char population. [7]

B. Long term Strategy:

1. Forming district vision 2020 committee and strengthening its activities.
2. Integrating of primary eye care into primary health care where it is found absence and activating their activities where it is already in place.
3. Collaboration, partnership, integration all the public and private health and eye care service providers working at Char dominant districts. District Vision 2020 committee will play effective role in this function.
4. Human resource development:

- Recruiting health workers in vacant posts as required serving the population.
- Training of health workers on primary eye care.
- Recruiting local personal as “ophthalmic assistant” for providing training on primary eye treatment and refraction for 1 year. These people will be working in their own community after completion of training. [34] Soft credit facilities for the ophthalmic assistants to set up spectacle dispensing shop and purchasing basic equipments in order to run their dispensary in own community.
- Refresher training for health workers and ophthalmic assistants at regular intervals.

9. Developing good referral system from the *Char* community to secondary or tertiary level of eye care providing organization.
10. Development of health awareness by different medias and school education.

8. References:

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9. Appendix:

9.1. Questionnaire:

S L No

Data collection form

1. District: Rangpur

2. Thana: Gongachara

3. Union:

1	Kolkondo
2	Lakshmitari

4. Name Of Village:

1	Purbo Ichly
2	Sonkardho
3	Joyramujha
4	Mandrain
5	Motkupur
6	Kuribisha
7	Dokhin Kolkondo
8	Babu Para
9	Ali Kishamot
10	Jogitari

5. House Hold No:

6. Completed by:

1	Mizanur Rahman Bokul
2	Rashed Ali Munsur
3	Sodrul hassan raju

7. Date completed: 2010

Basic Demographic Information

8. Age

9. Gender

1	Male
2	Female

10. Level of Education (schooling 0-10)

1	None
2	Primary
3	High School
4	Secondary
5	Higher secondary
6	Graduate
7	Post Graduate

11. Present Occupation:

1	None
2	Farmer
3	Housewife
4	Small business
5	Fishing
6	Helping household or agricultural work
7	Student
8	Other

12. Currently working or not?

1	Yes
2	No

13. If not working currently, whether the respondent is dependent on other family members?

1	Yes
2	No

14. Type/Level of dependency?

1	Fully	3	None
2	Partial	4	Others

15. No of family member dependant on you?

16. Type of housing

1	None	3	Paka barui
2	Kacha bari	4	Other

17. Gross monthly household expenditure in Taka

18.Has own agriculture land

1	Yes
2	No

19. Has own house-land:

1	Yes
2	No

20. Access to Food: whether respondent can afford minimum dietary requirement per day?

1	None	3	Two meals per day
2	One meal per day	4	Three meals per day

Disease/Surgery related Information

21. Visual acuity

R/E

1	<6/18
2	>6/18 to <6/60
3	>6/60 to <3/60
4	>3/60 to NPL

L/E

1	<6/18
2	>6/18 to <6/60
3	>6/60 to <3/60
4	>3/60 to NPL

22. Effected Eye

1	Right Eye	3	Both Eye
2	Left Eye	4	None

23. Type of disease

R/E

1	Conjunctivitis
2	Pterygium
3	Vit A defficiency Disease
4	Chalazion
5	Pingucula
6	Blepharitis
7	Presbiopia
8	Mild refractive error < 6/18
9	Dry eye
10	Chr Dacrocystitis
11	Others

L/E

1	Conjunctivitis
2	Pterygium
3	Vit A defficiency Disease
4	Chalazion
5	Pingucula
6	Blepharitis
7	Presbiopia
8	Mild ref. error < 6/18
9	Dry eye
10	Chr Dacrocystitis
11	Others

24.Duration of current disease

R/E

1	< 1 week
2	> 1 week< 2 week
3	>2 week <4 week
4	> 4 Week

L/E

1	< 1 week
2	> 1 week< 2 week
3	>2 week <4 week
4	> 4 Week

25. Treatment received

1	yes
2	No

26. From where treatment received ?

1	Local pharmacy
2	District G. Hospital
3	Traditional healers
4	Eye Clinic
5	None
6	Other

27. How much you are to pay for the treatment there ?

1	Tk 100
2	Tk 100 less
3	Tk 100 more

28. What is the total cost of you treatment? Tk.

29. If not treated what are causes ?

1	Shortage of Finance
2	Absence of eye care service center
3	Long distance
4	No body to pay accompany
5	Others

30. If you have any eye disease from where you seek services ?

1	Local Pharmacy
2	Palli Chikisshak
3	Union Health center
4	Thana health center
5	NGO Eye Hospital
6	Local general Practitioner
7	Gov. Hospital
8	Private eye specialist
9	Traditional healers
10	Others

31. Did you suffer from any other disease previously?

1	Yes
2	No

32. What is the distance of the nearest eye care service provider ?

1	5 km
2	10k m
3	20 km
4	More than 20 km

33. What is the vehicle you use to go to the hospital/ eye care center ?

1	By Riksha/Van
2	By cycale
3	By Foot
4	By Boat
5	By Bus
6	Multiple vehicles
7	By Motor bike
8	Others

9.2. Ethical Approval of BMRC

বাংলাদেশ চিকিৎসা গবেষণা পরিষদ
Bangladesh Medical Research Council
BMRC

Ref: BMRC/NREC/2007-2010/351

Date: 12/07/2010

National Research Ethics Committee

Dr. Khairul Islam
International Centre for Eye Health
London School of Hygiene and Tropical Medicine
Keppel Street, London WC1E7HT. UK.

Subject: Ethical Clearance

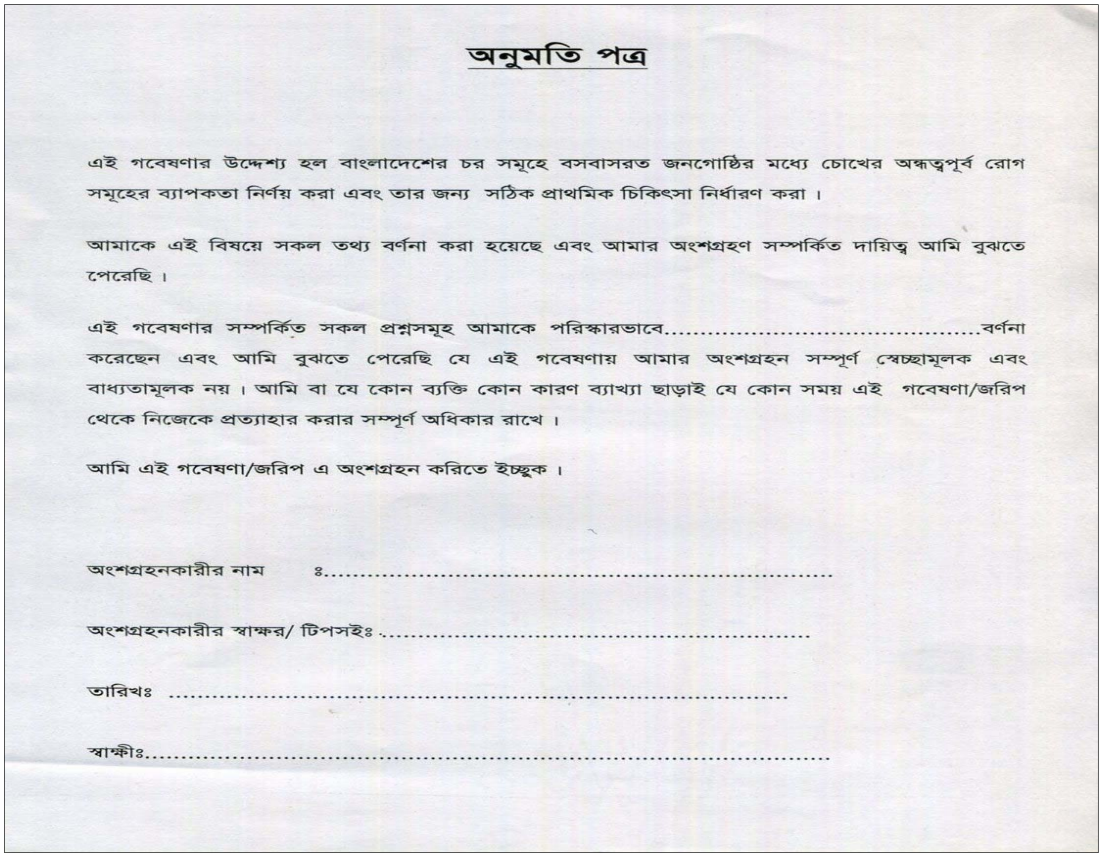
With reference to your application on the above subject, this is to inform you that your Proposal entitled **"Magnitude of non-vision-impairing conditions (NVIC) among the Char population in rural Bangladesh"** has been reviewed and approved by the National Research Ethics Committee (NREC).

You are requested to please note the following ethical guidelines as mentioned at page 2 (overleaf) of this memo-

(Prof. Harun-Ar-Rashid)
MD, MSc, MPH, PhD, FRCP Edin
Director

Mohakhali, Dhaka-1212, Bangladesh, Phone : 8811395, 8828396, Fax : 880-2-8828820
E-mail : bmrc@citechco.net

9.3. Consent form in Bangla:



অনুমতি পত্র

এই গবেষণার উদ্দেশ্য হল বাংলাদেশের চর সমূহে বসবাসরত জনগোষ্ঠির মধ্যে চোখের অন্ধত্বপূর্ব রোগ সমূহের ব্যাপকতা নির্ণয় করা এবং তার জন্য সঠিক প্রাথমিক চিকিৎসা নির্ধারণ করা ।

আমাকে এই বিষয়ে সকল তথ্য বর্ণনা করা হয়েছে এবং আমার অংশগ্রহণ সম্পর্কিত দায়িত্ব আমি বুঝতে পেরেছি ।

এই গবেষণার সম্পর্কিত সকল প্রশ্নসমূহ আমাকে পরিস্কারভাবে.....বর্ণনা করেছেন এবং আমি বুঝতে পেরেছি যে এই গবেষণায় আমার অংশগ্রহন সম্পূর্ণ স্বেচ্ছামূলক এবং বাধ্যতামূলক নয় । আমি বা যে কোন ব্যক্তি কোন কারণ ব্যাখ্যা ছাড়াই যে কোন সময় এই গবেষণা/জরিপ থেকে নিজেকে প্রত্যাহার করার সম্পূর্ণ অধিকার রাখে ।

আমি এই গবেষণা/জরিপ এ অংশগ্রহন করিতে ইচ্ছুক ।

অংশগ্রহনকারীর নাম ঃ.....

অংশগ্রহনকারীর স্বাক্ষর/ টিপসইঃ .....

তারিখঃ .....

স্বাক্ষীঃ.....

9.3.1. Translation of consent form:

The aim of the study is to determine the magnitude of non vision impairing diseases among the Char population and to recommend for a appropriate primary eye care services.

I have been briefed all the relevant information on it and I have understood my responsibilities in participating in this study. All the questions have been clearly described by ----------. I understood that my participation in this study is voluntary and not compulsory. I have the right to withdraw my participation without explaining anything at any time. I am willing to participate in this study.

Name of the participant: ……

Signature or Finger print: ……

Date: ……

Witness: ……

9.3.2 Photograph Consent form

Name of photographer: _____

Consent to publication :

This is to state that I give my permission for the use of my image in publications of the International Centre for Eye Health, including books, journals, reports, CD-ROMs, DVDs and on the web. I understand that the material will only be used in educational publications and will not be used for advertising.

Name: _____

Signature or thumb print: _____

Name of interpreter (where relevant): _____

Signature of interpreter (where relevant): _____

Date: _____

Place: _____

9.4. Care form:

London School of Hygiene & Tropical Medicine (University of London) *Combined Academic, Risk assessment and Ethics (CARE) approval form* **for MSc Project Reports**	
This form must be completed electronically. For detailed guidance, please refer to the **Project Handbook for your course.*	
SECTION 1 – STUDENT AND COURSE INFORMATION	
MSc DETAILS AND DEADLINES (deadlines to be communicated by Course Director)	
Academic Year	**2009-10**
MSc course (and stream, where applicable)	**Community Eye Health**
Deadline for Supervisor approval	**26 April 2010**
Deadline for Course Director approval	**26 April 2010**
Deadline for submission to Ethics Committee	**Friday 30th April 2010**
Target for approved form to be passed to TSO	**Friday 28th May 2010**
STUDENT, SUPERVISOR AND TUTOR DETAILS (to be completed by student)	
Full name of student	
Student email address	Islam.Khairul@lshtm.ac.uk
Year of study (part-time students only)	☐ First Year ☐ Second Year
Supervisor name	Dr. Astrid Leck

Supervisor email address	Astrid.Leck@lshtm.ac.uk
Supervisor status (at time of this version of the form being completed)	KHAIRUL ISLAM
Name of personal tutor (where Supervisor is still to be identified)	Dr. Astrid Leck

SECTION 2 – APPROVAL AND SUBMISSION STATUS

***Students please note:** It is a requirement of your LSHTM degree that you obtain all required approvals before beginning your project work. To comply with legal requirements, your Supervisor and Course Director must specifically give Risk Assessment approval. Ethical approval must also be obtained if required (answers in Section 5 will help determine if so).*

STUDENT DECLARATION (to be completed for all projects)

I agree to conduct my project on the basis set out in this form, and to consult staff (initially, my Supervisor) if making any subsequent changes – especially any that would affect the information given with respect to ethics approval.	☒
I agree to comply with the relevant safety requirements, and will submit a separate request for LSHTM travel insurance where relevant.	☒

**Where seeking ethical approval for a study involving human subjects, please also attach copies of any information sheets, consent forms, and other relevant documents.*

Date of declaration	26 April 2010

***Further note:** when submitting your final project report at the end of the summer, you should also include a copy of your approved CARE form (which will be seen by the project markers); but to preserve anonymity, the page above – with your name – should be omitted.*

STAFF APPROVAL	
***Staff please note:** Sections 3 and 4 of the form should be completed by the student before you are asked to sign. If you tick 'no' to any of the 'Yes/No' questions below, or disagree with any of the statements given, or have any other concerns, then you should not give approval – instead, please contact the student immediately to inform them of your concerns and discuss changes which they may need to make before you may be willing to give approval.* **Supervisors and Course Directors** *should also be aware that in the exceptional case of a request to undertake a project in a country or region to which the Foreign & Commonwealth Office advise against travel, the student would need to fill out a separate form which will then need further School-level approval by the Safety Manager and Secretary & Registrar.*	
SUPERVISOR'S APPROVAL (required for all projects – this approval should be given first)	
I agree that Section 3 of this form is a reasonable summary of the proposed project.	☒ Yes ☐ No
I agree that responses in Section 4 of this form address the main risks connected with a project of this nature.	☒ Yes ☐ No
Name of Supervisor (if not yet identified, personal tutor or Course Director should approve)	Dr. Astrid Leck
Date of approval	26/04/2010
COURSE DIRECTOR'S APPROVAL (required for all projects – should follow Supervisor approval)	
I agree that the academic content of the proposed project, set out at Section 3 of this form, is suitable for this MSc.	☒ Yes ☐ No
I agree that responses in Section 4 of this form address the	☒ Yes

main risks connected with a project of this nature.	☐ No
Name of Course Director (or nominee)	Daksha patel
Date of approval	28/04/10
DEPARTMENTAL SAFETY SUPERVISOR'S APPROVAL (only required if project involves working with pathogenic organisms, human blood or radiochemicals – should follow Supervisor approval)	
I agree that the proposed project, as set out in this form and particularly Section 4, may proceed.	☐ Yes ☐ No
Name of Departmental Safety Supervisor (or nominee)	
Date of approval	
ETHICAL APPROVAL (required for all projects involving human subjects or human data, except for public domain data that cannot enable the identification of living people – NB that Supervisor approval **must** have been received before the application is submitted to the Ethics Committee)	
Date application received	
Ethics Committee application number assigned	
On behalf of the Ethics Committee, I approve the project proposal set out on this form.	☐ Yes ☐ No
Name of Ethics Committee scrutineer	
Date of approval	
SECTION 3 – APPLICATION FOR ACADEMIC APPROVAL **All students should complete all sub-sections (3.1, 3.2 and 3.3); if particular questions are not applicable to you then please write 'N/A'.*	

3.1 PROJECT OUTLINE (should not normally exceed 750 words total)

Proposed project title: (should not normally exceed 20 words)

Magnitude of non-vision impairing conditions (NVIC) among the Char population in rural Bangladesh

Proposed project type:

**See course-specific section of Project Handbook for details of project types permitted for each MSc. Be aware that restrictions may apply for individual courses.*

Needs assessment, quantitative

Proposed project length:

**For almost all students, this will be 'Standard'. Long and extended projects are only available for certain ITD courses; they have a different schedule and allow a slightly greater word count.*

☒ Standard ☐ Long ☐ Extended

Background: (about 200 words)

**Indicate why this topic is of interest or relevance.*

**If the project involves work with a specific organisation please give details.*

**Please give any other details specifically relevant for consideration by the Ethics Committee, e.g. related to purpose.*

Non-vision impairing conditions are the ocular conditions from which most of a population suffer. The prevalence of which is more common among populations with poor hygiene conditions. No specific study has been carried out in Bangladesh to determine the prevalence or causes of NVICs. People who reside in the Char areas suffer from extreme poverty and are deprived of primary health care. Their poverty level is worse than that in other parts of Bangladesh.

Though some organizations have started initiatives to improve the lifestyle of this

population in terms of health, education and financial aspects, no provision has so far been made for eye care. NVICs are expected to be common among this population for which some of them will go on to suffer blindness as a consequence of these diseases. This will therefore also affect their quality of life. Due to poverty they are not able to seek treatment from the proper services providers and they often depend on the traditional healers and medicine.

If primary eye care is incorporated with primary health care provision it is hoped that this will help these people to achieve healthier lives. It is hoped that this study may reveal the problems which prevail there and enable recommendations to be made to plan for eye care provision in this region of Bangladesh.

Hypothesis: (about 30 words, where applicable)

Overall aim of project: (about 30 words)

To determine the prevalence and type of non-vision impairing conditions (NVIC) amongst the Char population in Bangladesh and to develop an appropriate primary eye care programme for the Char population.

Specific objectives of project: (about 70 words)

- To estimate the prevalence and types of non-vision impairing conditions (NVIC) in the Char population.
- To identify the main causes of NVIC and its distribution by age and sex.
- To assess the available eye care services in the char areas, who are the providers and their involvement in delivering eye care services in those areas, the health seeking behaviour and barriers to eye care services among this population.
- To make recommendations for a suitable primary eye care programme to address the specific needs of the Char population.

Proposed methods: (about 200 words)

Please summarise methods, and include **any relevant details for consideration by the Ethics Committee such as numbers of participants and procedures to be*

performed.

- Approval from LSHTM ethical committee and Bangladesh Medical Research Council.
- The study is a cross-sectional population based prevalence survey.
- Sample size: Assuming prevalence of 30%, with absolute precision 5%for NVIC in all ages and sexes, 323 persons are required using simple random sampling. Using villages as cluster and adjusting cluster design effect of 1.75 and response rate 90% the final sample size is 630 persons. Five villages will be randomly selected out of 15. 30 households with 4.7/household within each selected village will be examined to meet the sample size.
- Consent will be taken from the person going to be examined.
- People living not less than 6 months in the char area (at the current place) will be examined.
- For each person VA will be measured and slit lamp bio-microscopy will be done.
- A questionnaire for each person will be filled in about the person demographic, eye disease, health seeking behaviour, service facilities data. For them who cannot cooperate data will be collected from their close relatives/parents.

References: (max 150 words)

**List any key references which will shape the project, including for methods to be used. It should not normally be necessary to quote more than 5 references.*

[1]***.Statistical pocket book ,Bangladesh*** 2007 *www.bbs.gov.bd/dataindex/pb_wb_page.pdf* -(accessed 6 March10)

[2] .http://www.banglapedia.org/httpdocs/HT/C_0135.HTM (accessed 6 March10)

[3]. Life in the chars in Bangladesh; Nutritional surveillance project ;14

[4] . Hussain A, Awan H , Khan M D Prevalence of non vision impairing conditions in a village in Chakwal district,Punjab,Pakistan ; Ophthalmic Epidemiol;2004,11(5) pp413-426

[5]. National Blindness and low vision survey in Bangladesh 2000

Prior work: (only where relevant; max 100 words)

**Indicate any previous work you have done related to this project topic, including student work, professional work, or publications.*

3.2 FEASIBILITY (about 100 words total – but can write more or write less if appropriate)

What could cause this project to fail, i.e. prevent you from achieving your

objectives?

**Please indicate any aspects of your proposed approach which could potentially experience difficulties, e.g. delays with permissions, data collection or storage problems, lack of sufficient comparable information, etc. You may also wish to mention any wider matters which could affect your project, e.g. civil unrest, natural disasters, transport availability.*

Heavy rainfall and flooding may affect the study. During the latter part of August and September the Char are vulnerable to heavy flooding. If the floods come earlier this year this may affect the study, in particular with respect to the people dwelling on island Chars.

What alternative plans do you have in case you encounter any of the potential problems you have identified?

There are some island Chars with good communication facilities and less vulnerable to inundation in Gaibandha district may be chosen for the study and in this case the communication cost will rise a bit.

3.3 INTELLECTUAL PROPERTY, COPYRIGHT AND OTHER PERMISSIONS

**Please also see Section 5.2 regarding any specific data rights limitations arising from local ethical or research governance requirements*

If you expect to use existing data, how will you obtain it and what permissions will be required?

Nil

Having considered whether intellectual property rights (IPR) or copyright issues may affect your project, will any specific agreements be required?

**Please tick all boxes that apply, and attach copies of any forms/agreements (even if in draft).*

☐ No specific IPR, Copyright or permissions issues should apply to this project (student

retains Copyright and related IPR by default, in line with LSHTM registration declaration)

☒ IPR to be retained by LSHTM (specific LSHTM form to be completed)

☐ Copyright to be transferred to LSHTM (specific LSHTM form to be completed)

☐ IPR, Copyright or other agreements/permissions required with external parties/organisations

Please give any further relevant details about IPR, copyright or other permissions.

SECTION 4 – APPLICATION FOR RISK ASSESSMENT APPROVAL

**All students should answer all questions in sub-section 4.1; this will make clear which of the following sub-sections you need to complete.*

Ensuring safety during project work is the responsibility of <u>each individual student</u>, and not of LSHTM or LSHTM staff. **Please see the Project Handbook for further guidance.*

4.1 TYPE OF RISK (to be completed by all students)

Where will the project be carried out? (please tick all that apply)

**Note that work away from LSHTM or outside the UK means <u>any</u> form of work for your project, not just primary data collection. Some courses may have specific restrictions on this.*

☐ **All work will take place either at LSHTM, in libraries in the UK, or at my personal residence in the UK.** [If so, you do not need to complete either section 4.2 or section 4.3]

☐ **Some work will take place in the UK that is away from LSHTM sites in**

London, is non-Library-based, and is not at my personal residence. [If so, section 4.2 on 'Work away from LSHTM' must be completed]

☒ **Some work will take place at my personal residence outside the UK** [If so, section 4.3 on 'Work outside the UK' must be completed]

☐ **Some work will take place outside the UK that is not at my personal residence** [If so, both sections 4.2 and 4.3 on 'Work away from LSHTM' and 'Work outside the UK' must be completed]

Will the project involve working with or handling any of the following materials?

Pathogenic organisms ☐ Yes ☒ No

Human blood ☐ Yes ☒ No

Radiochemicals ☐ Yes ☒ No

[If 'Yes' to any of the above, Sections 4.4 and 4.5 must be completed]

Are any other potentially hazardous activities likely to be carried out during the project?

☐ Yes ☒ No

[If 'Yes', Section 4.5 must be completed]

Do any special requirements (e.g. disability-related issues) or other concerns need to be taken into account for either you as a student, study participants or colleagues?

☐ Yes ☒ No

[If 'Yes', Section 4.6 must be completed]

4.2 WORK AWAY FROM LSHTM (to be completed if any work will be done away from LSHTM, other than at your home or at libraries elsewhere in the UK)

Will the project be based in an established hospital, college,	☐ Yes

research institute, NGO headquarters, field station or other institutional site? If 'Yes', please give the name and location of the site(s); describe approximately what proportions of your project will be spent there; and state name and role of person who has confirmed willingness to support you at each site (indicating extent of correspondence, especially what they have confirmed in writing).	☒ No
Will you have an 'external supervisor', co-supervisor or other main advisor, or be working with any specific organisation(s), during your work away from LSHTM? If 'Yes', please indicate the name, role, contact details, and level of support that any such external advisors are expected to provide, and give details about any organisations you will be working with.	☐ Yes ☒ No
Will the project involve personal visits, interviews or interactions with people in their homes, workplaces, community settings or similar? If 'Yes', please give details, including approximately what proportion of your project this will involve.	☒ Yes ☐ No
As an ophthalmologist I will examine the eyes of the participants for finding NVICs with slit lamp.	
Will the project involve lone / isolated work or significant travel? If 'Yes', please give details, including approximately what proportion of your project this will involve, and state how you can be contacted while working or travelling.	☒ Yes ☐ No
I will have to visit the field level to examine the eyes of the people for 21 days assuming 30-35 patients to be attended every day. I can be contacted by cell phone,	

internet (email).

What arrangements are proposed for contact with your main supervisor while you are away from LSHTM? Indicate expected ease and frequency of contact, and communication methods to be used.

E mail and phone can be used to contact my supervisor. At least twice a week I can contact my supervisor by email.

Please tick to confirm:	☒ **I have read the LSHTM Code of Practice on off-site work.**

4.3 WORK OUTSIDE THE UK (to be completed if any work will be done outside the UK)

What form of project work will be undertaken outside the UK? (please tick all that apply)

☐ **Work at my family home or personal residence only**

☐ **Work at an established hospital, college, research institute, NGO headquarters, field station or other institutional site**

☒ **Work away from my personal residence or an established site**

**Note that for either the second or third options, you should also have completed Section 4.2.*

Name the country/countries and region(s) in which work will be undertaken:

Country or countries: Bangladesh Region(s): Rangpur

Do the Foreign & Commonwealth Office's (FCO) Travel Advice Notices (www.fco.gov.uk/en/travelling-and-living-overseas/travel-advice-by-country/) **advise against travel to the regions(s), country or countries involved?** **Note that if 'Yes', the School will not normally permit such travel for project*	☐ Yes ☒ No

*work. In **exceptional circumstances only**, requests may be considered by the Safety Committee and require approval by the Safety Manager and Secretary & Registrar.*	
Please tick to confirm:	☒ **I understand that LSHTM travel insurance is required for any international travel as part of my project.** **Travel insurance can be applied for using a separate form.*

4.4 WORK WITH HAZARDOUS SUBSTANCES (to be completed if the project involves any work with pathogenic organisms, human blood or radiochemicals – NB that this will require approval by the Departmental Safety Supervisor)	
Name the organism or organisms to be used:	
Identify all potential routes of infection:	
Name the radiochemical or radiochemicals to be used:	
List laboratories where work with pathogens or radioisotopes will be carried out:	
List disinfectants to be used, and describe arrangements for disposal of used material:	
Will or might Health Surveillance be required for you or any	☐ Yes

staff working with you? If 'Yes', please give details.	☒ No
4.5 PRECAUTIONS AGAINST HAZARDS (to be completed if any potentially hazardous activities are likely to be carried out during the project. Refer to Project Handbook and School safety documentation for further information. Departmental Safety Supervisor's approval should be obtained where felt appropriate by project Supervisor.)	
Indicate any procedures, activities or aspects of the proposed project which may entail hazards (including work with hazardous substances as per Section 4.4, or anything else relevant). Please set distinct hazards out separately, in a numbered list.	
Indicate the precautions you will take to prevent or mitigate such potential hazards. Please number these to refer to the specific hazards identified in the preceding question.	
4.6 SPECIAL REQUIREMENTS (to be completed if the project involves any special requirements, e.g. disability-related issues, or other concerns that need to be taken into account for either you as a student, study participants or colleagues)	
What special requirements or concerns need to be taken into account?	
Do these need to be considered in planning arrangements? If 'Yes', please give details.	☐ Yes ☐ No
Do these impact on supervision arrangements? If 'Yes', please give details.	☐ Yes ☐ No

Does the project location need to be considered in relation to these? If 'Yes', please give details.	☐ Yes ☐ No
Do arrangements for access to specialist medical treatment need to be considered? If 'Yes', please give details.	☐ Yes ☐ No

SECTION 5 – APPLICATION FOR ETHICS APPROVAL

All students should **answer all questions in sub-sections 5.1 and 5.2. Answers to 5.1 will make clear whether approval by the LSHTM Ethics Committee is necessary, and which later sub-sections you may need to complete. Section 5.2 covers any external approvals required.*

5.1 SCOPE OF STUDY (to be completed by all students)

Before completing this part of the form, please read the Ethics Approval Policy & Procedure plus guidance notes at* http://intra.lshtm.ac.uk/reference/ethicsstuds.html *. This describes what to do next if formal LSHTM ethics approval is required. NB that supervisor approval must be obtained **before an application is submitted to the Ethics Committee.*

Which of the following applies to your project? (please tick one option only)

**Note – the term 'human data' includes any documentary data, datasets or biological samples.*

☐ **Project does not involve any human subjects or any human data.** [If so, formal LSHTM ethics approval is not required and you do not need to complete Sections

5.3 or 5.4]

☐ **Project involves human data, but <u>all</u> this human data is fully in the public domain.** [If so, formal LSHTM ethics approval is not required and you do not need to complete Sections 5.3 or 5.4]

**Public domain human data must be: available to any member of the public without special permission; to which access is not restricted in any way; and which does not enable the identification of living people, either directly or by linking to other data.*

☐ **Project involves some non-public-domain human data, <u>all</u> of which was previously collected in another study or studies.** [If so, formal LSHTM ethics approval is required and Section 5.3 must be completed]

☐ **Project involves some <u>additional</u> collection of data, further to an ongoing or previously completed study or studies.** [If so, formal LSHTM ethics approval is required and Section 5.4 must be completed]

☒ **Project is a completely <u>new</u> study which will involve human subjects or human data.** [If so, formal LSHTM ethics approval is required and Section 5.4 must be completed]

5.2 LOCAL ETHICAL APPROVAL OR RESEARCH GOVERNANCE APPROVAL (to be completed by all students)

** As well as approval from the LSHTM Ethics Committee, projects may require specific approval from other involved or responsible bodies. For example, in the UK you may need specific authorisation to work in an NHS facility, or to work with vulnerable groups such as patients or children. Outside the UK a wide range of requirements may apply e.g. from local or national Ethics Committees, government departments etc.* ***Students must investigate all potential local approval required for your project work. Failure to check or gain any necessary external approval may invalidate LSHTM approval.***

Is local approval required for the work being done (whether this approval is still to be obtained, or has already been granted)? **This should include any forms of ethical approval, research governance approval or other specific permissions that may apply.*	☒ Yes ☐ No

If 'Yes', give details of local approval to be obtained (this must be in place before commencing fieldwork) or which has already been granted.

**Please name all bodies whose approval is required, or indicate where work is expected to take place using permissions already granted for a 'parent' project. Where approval has already been granted, quote approval reference numbers and if possible give web links to documents.*

If 'No', explain why formal local approval is not required, and describe any less formal permissions, invitations or support you are being given for this work.

**If you will be working away from LSHTM with human subjects or human data, but cannot identify a local Ethics Committee or believe that no formal approval is required, then please give details and explain what you have done to check this. In such cases, if you do not have formal approval you should always demonstrate appropriate local support, such as correspondence with local government officials or an involved Non-Governmental Organisation.*

Bangladesh Medical Research Council

For data to be used or collected in the project, will any specific data rights permissions be required or usage limitations apply?	☒ Yes ☐ No

5.3 PROJECTS USING ONLY PREVIOUSLY-COLLECTED HUMAN DATA (to be completed if project involves non-public-domain human data, datasets or biological

samples previously collected in another study or studies; if collecting any new data, complete Section 5.4 instead) **Further guidance is given at* http://intra.lshtm.ac.uk/reference/ethicsstuds.html	
Summary of purpose and methods of the original study or studies: (max 100 words)	
Give details of all approvals under which the original study or studies took place: **Please quote names of Ethics Committees and approval reference numbers (required if previous approval was from LSHTM); if possible give web link to original study application.*	
Proposed study: Ensure that the project outline given in Section 3.1 states the purpose, methods and procedures of the new work to be done in your project, and describes how this builds on the previous study or studies (for which participants will already have been recruited, data or samples collected, and procedures performed). Do not reproduce here.	
Will your analyses be for purposes not covered by the original application detailed above? If 'Yes', indicate how you will obtain (i) permission to use the data from the principal investigator responsible for each original study; and (ii) retrospective consent, where appropriate, from the participants in each original study.	☐ Yes ☐ No
Does the project involve analysis of documentary information and/or data already collected from or about human subjects? If 'Yes', specify analyses briefly.	☐ Yes ☐ No

Does the project involve laboratory analysis of human biological samples already collected, or new or additional analysis of stored samples? If 'Yes', specify the laboratory analyses or tests to be performed.	☐ Yes ☐ No
Specify how confidentiality will be maintained. When small numbers are involved, indicate how possible identification of individuals will be avoided.	
5.4 PROJECTS COLLECTING ANY NEW HUMAN DATA (to be completed if project involves collection of human data, datasets or human biological samples – either as a completely new study, or collecting additional data further to an ongoing or previously completed study) **Further guidance is given at* http://intra.lshtm.ac.uk/reference/ethicsstuds.html	
Proposed study: Ensure that the project outline given in Section 3.1 contains sufficient detail (inc. purpose, methods, procedures for both new data collection and any work building on previous studies), so as to allow the Ethics Committee to make an informed decision without reference to other documents. Do not reproduce here.	
Is your project a randomised trial?	☐ Yes ☒ No
Will any human biological samples be collected? If 'Yes', specify details.	☐ Yes ☒ No
Will any human biological material be stored at LSHTM for	☐ Yes

more than 24 hours? If 'Yes', specify which samples and how they will be stored. ***Further guidance is given at*** http://intra.lshtm.ac.uk/safety/Safety%20manual-3-HTA.pdf	☒ No
Specify the number - with scientific justification for sample size – age, gender, source and method of recruiting subjects for the study.	
Assuming prevalence of 30%, with absolute precision 5%for NVIC in all ages and sexes, 323 persons are required using simple random sampling. Using villages as cluster and adjusting cluster design effect of 1.75 and response rate 90% the final sample size is 630 persons. Five villages will be randomly selected out of 15. A total 30 households with 4.7/household size within each selected village will be examined to meet the sample size.	
State the location and likely duration of new or additional human data collection, and the extent to which this will be carried out by you alone, or in collaboration with others, or by others.	
The Kolkond and Laxitari union under Gangachara Upazila of Rangpur district will be the place study. The subjects will be examined for 21 days. As an ophthalmologist I will examine the eyes of the people, two ophthalmic assistant will record the vision and help me to examine. One person will fill in the questionnaires. One field organizer and a local representative will assist us to find out the households and tracking.	
State the potential distress, discomfort or hazards, and their likelihood, to which research subjects may be exposed (these may include physical, biological and/or psychological hazards). What precautions are being taken to control and modify these hazards?	

In the study no such potential distress and hazards are expected. Only the people will go under slit lamp examination and dilatation if required. Some of them may require to take time out from their working hours. In this case we will explain in detail prior to the study and obtain his / her participation on voluntary basis. We will provide medicine free of charge to the patients who require treatment. The people requiring spectacles among the study group will be given free spectacles. Patients needing further intervention would be referred for free treatment in our hospital .

Specify how confidentiality will be maintained. When small numbers are involved, indicate how possible identification of individuals will be avoided.

Handling the data confidentially and omitting the names of the responders as soon as possible.

State the manner in which consent will be obtained from subjects and <u>supply copies of the information sheet and consent form</u>.

- Written consent is normally required. Where not possible, explain why and confirm that a record of those giving verbal consent will be kept.
- Where appropriate, please state if and how the information and consent form will be translated into local language(s).

Written consent will be taken. Where not possible, explain why and confirm that a record of those giving verbal consent will be kept.

As well as collecting new data, will your project also make use of any human data or biological samples collected in a previous study or studies? If 'Yes', summarise the purpose and methods of the original study or studies – for which participants will already have been recruited, data or samples collected, and procedures performed. (max 100 words)	☐ Yes ☒ No

9.5. Contribution of others forms for MSc Project Report:

London School of Hygiene & Tropical Medicine

(University of London)

Contribution of Others form for MSc Project Reports

ABOUT THIS FORM

This form is intended to record, in a structured way, the input of supervisors and others to MSc project reports. Students and supervisors should jointly discuss and agree responses, to be filled out by the student and a final version approved by the supervisor. The approved form should be submitted with the final project report, both electronically and bound into hardcopies.

PROJECT DETAILS (Note – student should be identified by candidate no. only, at end of form)

Project title	Prevalence of Non vision impairing ocular conditions among the Char people of Rangpur district in Bangladesh		
MSc course	MSC CEH	**Academic Year**	**2009-10**

PROJECT DEVELOPMENT

Who initiated the project (i.e. identified area for investigation)?

☒ Student ☐ Supervisor ☐ Other (please give details): _____

Who was primarily responsible for the project study design?

☐ Student ☐ Supervisor ☒ Both jointly

What level of external input (whether from the supervisor or others) influenced development of the project? *Please tick the most appropriate box*

☐ None: the student decided on the design and developed the project independently

☒ Some: suggestions from the supervisor or others supplemented the student's own initiative

☐ Substantial: the supervisor or others set or influenced major criteria, with student developing their own ideas from there

☐ Not applicable: the nature of the project was such that the student had minimal opportunity to contribute to the design

CONTACT, INPUT AND SUPPORT

How often, on average, was the project discussed with the supervisor (including by email)? *Please tick all boxes that apply*

☐	Approx. daily	☒	Intermittently (varied from daily to monthly)
☐	Approx. weekly	☐	Rarely (less than 5 times ever)
☐	Approx. monthly	☐	Never

Please describe general level of input and support given by the supervisor

Understanding the project design , questionnaire development, guidelines during writing dissertation.

How often, on average, was the project discussed with someone other than the supervisor (including by email)? *Please tick all boxes that apply*

☐	Approx. daily	☒	Intermittently (varied from daily to monthly)
☐	Approx. weekly	☐	Rarely (less than 5 times ever)
☐	Approx. monthly	☐	Never

Please give details of any input or support received from individuals other than the supervisor (indicate their official role/title, and the type and amount of assistance they provided)

Dr.Daksha Patel , MSc course Director, LSHTM –Understanding the project aims and objectives, methodology and dissertation writing guide lines.

Mr Selvaraz in sample calculation and data analysis.

MAIN RESEARCH WORK

What level of input (from supervisor or others) was involved in the main body of work for the project? *Please tick the most appropriate box*

☐ None: the student worked alone with no supervisor or external input

☐ Minimal: the student worked alone with very little supervisor or external input

☒ Reasonable: the student received appropriate assistance when needed

☐ Substantial: the project required significant input from the supervisor or others

How much assistance was given (by the supervisor or others) in finding appropriate references? *Please tick the most appropriate box*

☐ None: the student identified all references

☒ Minimal: a small amount of assistance and/or a small number of references were provided

☐ Reasonable: appropriate assistance and/or an appropriate number of references were provided

☐ Substantial: either substantial assistance was provided or most references were given by the supervisor

How much assistance was given (by the supervisor or others) in the analysis and interpretation of the results? *Please tick the most appropriate box*

☐ None

☒ Basic review: the results were discussed with the student, with appropriate advice given e.g. on statistics, presentation, interpretation

☐	Substantial review: the results were checked by the supervisor or others, then discussed with the student; with more specific advice e.g. on the significance of the data or how to analyse it

WRITING-UP PROJECT REPORT

What involvement has the supervisor had with the written project report? *Please tick all boxes that apply*

☒	Supervisor has advised on the structure and content of the report
☐	Supervisor has not given any advice on the structure and content of the report
☒	Supervisor has read and advised on one or more drafts
☐	Supervisor has read and corrected final draft
☐	Supervisor has not read the project report prior to submission
☐	Supervisor has provided material or photographs for inclusion

STUDENT DECLARATION AND SUPERVISOR APPROVAL

I declare that my project has been undertaken with support as noted in this form and in the acknowledgements section of my report.	☒

Student candidate no.	491131	**Date of declaration**	1.09.2010

I confirm that, to the best of my knowledge, this form and the acknowledgements section of the associated report adequately represent the support received by the student in this project.	☒

Name of Supervisor	Dr. Astrid Leck	**Date of approval**	01/09/2010

9.6. Ethics Application Approval

Ethics No 009/397

Name: Khairul Islam

I confirm this ethics application has been approved.

Paula

Paula Elliott
Administrator
LSHTM Ethics Committee

London School of Hygiene & Tropical Medicine
Keppel Street
London WC1E 7HT

Tel: 020 7927 2221