The Indian Migrants Study

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Overview of the study

Background: India is experiencing rapid increases in obesity and diabetes which have been attributed to urbanisation and "westernisation". Migrants from rural to urban areas may be particularly vulnerable to developing obesity and diabetes, but little robust information to examine this hypothesis exists. Using the framework of a current cardiovascular risk factor screening study conducted in Indian factories (Sentinel Surveillance), we plan to recruit the non-migrant rural relatives of migrant urban factory workers, making comparisons of levels of obesity and diabetes between rural and urban participants of varying migration type. We will also identify the characteristics of migration pattern that mitigate or exacerbate obesity and diabetes risks, and determine the relative contribution of established risk factors (dietary intake and physical activity) and examine possible mechanisms by which migration increases diabetes risk. Using this and other data we will construct policy relevant models to predict India's current and future burdens of diabetes under different risk factor and secular trend scenarios. The work will be helpful in improving the health of migrants and our understanding of the obesity and diabetes epidemics in India.

Aims and objectives: The scientific aim of the study is to elucidate the effects of within-country migration on obesity and diabetes mellitus in India. The main hypothesis to be considered is that risks of developing obesity and diabetes among migrants from rural to urban areas are due to differential migration conditions and subsequent social and economic changes that mediate changes in dietary intake and physical activity patterns. The study aims to:

1. Quantify the risk of obesity and diabetes mellitus associated with different patterns of rural to urban migration by comparing the risk in migrants to that of their rural sibs, and also in non-migrant urban people aged 18-65 years from the six regions of India.
2. Identify pre-migration, migration and post-migration characteristics that mitigate the risk of obesity, insulin resistance and diabetes. Proposed factors include, amongst others, traditional diet, high physical activity, north Indian location, late age at migration, higher socio-economic position and/or level of education, migration with family, and retaining cultural beliefs and practices.
3. To create a policy relevant statistical model of the current and projected burdens of diabetes, implications for clinical workload and possible effects of preventive programmes, taking into account secular trends, rural-urban migration and demographic changes which will thereby strengthen the national initiative for evidence based public health policy.

Methods: A cross-sectional survey of factory workers and co-resident spouses will be conducted in four centres (Lucknow, Nagpur, Hyderabad and Bangalore) to categorise their migration status. For each index person, one non-migrant relative (sibling wherever possible, otherwise first cousin or friend) closest in sex-age will be invited to participate in the study. In case of urban non-migrants, however, only one in four eligible relatives will be invited to allow equal number of participants in all categories. Pairs of index person and non-migrant relative with then undergo clinical examination at clinics conducted in the factory (and in some peripheral camps) to collect data on relevant outcomes.

Source of funding: The study is funded by the Wellcome Trust, UK, and coordinated jointly by the All India Institute of Medical Sciences, India, and University of Bristol, UK.

Glossary of terms

Rural-urban areas: The unit of classification is 'village' for rural areas and 'town' for urban areas. According to the 2001 census, the definition of urban area is as follows:

a) All places with municipality, corporation, cantonment board or notified town area committee, etc, or
b) A place satisfying the following *three criteria simultaneously:*
    i. A minimum population of 5,000; and
    ii. At least 75 per cent of male working population engaged in non-agricultural pursuits; and
    iii. A density of population of at least 400 per sq. km. (1,000 per sq. mile).

Apart from these, the *outgrowths (OGs) of cities and towns have also been treated as urban* under 'Urban Agglomerations'. Examples of outgrowths are railway colonies, university campuses, port areas, and military camps etc. that may have come up near a statutory town or city but within the revenue limits of a village or villages contiguous to the town or city. Each such area by itself may not satisfy the demographic criteria laid down to qualify as an independent urban unit but may deserve to be clubbed with the towns as a continuous urban spread.

Sub-types of urban areas: An urban area can be further subdivided into town, small city or large city depending on the total population. A *'small city'* is a town with population greater than 100,000 but less than one million. A town with population in excess of a million according to the 2001 census is regarded as a *'large city'* (35 in total including urban agglomerations).

Slum: According to the 2001 Census, slum areas are:

a) All areas recognised by State/Local Government and UT administration as 'slum' whether or not they have been notified as such under any Act; or
b) A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities.

Place of origin (PO): The place (village/town/city) where a person lived for majority of the time in the first five years of life (this need not necessarily be place of birth).

Place of current residence (PCR): The place (village/town/city) where a person slept maximum number of nights over the 12 months preceding the date of interview (this need not necessarily be the factory city).

Index person: Factory employee or co-resident spouse

Relative: Sibling, first cousin or friend of the index person

a) Sibling: Brother or sister with common parents (father and mother); half-siblings who share either of the two parents but not both should be regarded as first cousins
b) First cousin: Children of either parent's brother or sister (common grandparents)
c) Friend: Include all other levels of relationship, including uncles/aunts/half-first cousins, etc

Migration: A permanent change of residence of at least a year's duration

Migrant types: Index persons will be classified into four migrant types depending on the combination of current residence and place of origin.

a) Rural-urban migrant (RUM): Current urban resident with rural PO
b) Rural non-migrant (RNM): Current rural resident with rural PO
c) Urban-rural migrant (URM): Current rural resident with urban PO
d) Urban non-migrant (UNM): Current urban resident with urban PO

Childhood and adult migrant: Those who migrate before the age or up to the age of 18 (completed years) will be called childhood migrants. This category will be relevant primarily for rural-urban migrants.

Household: A group of persons (related or unrelated) who normally live together and take their meals from a common kitchen unless the exigencies of work prevent them from doing so. However, if a group of unrelated persons do not take their meals from a common kitchen, then they are not constituent of a common household.

Methodology

A cross-sectional survey of factory workers and co-resident spouses will be conducted in four centres (Lucknow, Nagpur, Hyderabad and Bangalore) to categorise their migration status. For each index person, one non-migrant relative (sibling wherever possible, otherwise first cousin or friend) closest in sex-age will be invited to participate in the study. In case of urban non-migrants, however, only one in four eligible relatives will be invited to allow equal number of participants in all categories. Pairs of index person and non-migrant relative with then undergo clinical examination at clinics conducted in the factory (and in some peripheral camps) to collect data on relevant outcomes.

Setting: The study is being conducted in four cities across India, chosen to give a reasonable representation of the country's population in terms of geographical location (also reflective of genetic-ethnic makeup) and population mix (social, economic and religious groups). The chosen cities also have important differences in terms of their size, development, and infrastructure. The industries were included on a voluntary basis, but had to meet the criteria of being medium-large in size (at least 2,500 workers). The factories produce airplane parts (Lucknow), heavy electrical goods (Hyderabad), machine tools (Bangalore) and synthetic fibres (Nagpur). Each industry is twinned with a local medical college to form a designated centre. Professor KS Reddy at the All India Institute of Medical Sciences will coordinate the fieldwork, with technical support from the Centre for Chronic Disease Control, New Delhi. The surveys will be conducted largely at the factory and its associated residential areas, although some peripheral camps will be conducted near places where clusters of relatives reside.

No	City	Industry	Associated Medical College
1	Lucknow	Hindustan Aeronautics Ltd.	King George's Medical College
2	Hyderabad	Bharat Heavy Electricals Ltd.	Krishna's Institute of Medical Sciences
3	Bangalore	Hindustan Machine Tools Ltd.	Dr BR Ambedkar Medical College
4	Nagpur	Indorama Synthetics Ltd.	Government Medical College

Participants and sample size: The index person will be the factory worker or co-resident spouse, if any. These could be resident in the factory residential colony or outside. The relatives can be from anywhere in the country. The study sample size for the study is approximately 10,000 (2,500 per centre). This equates to around 1,250 relatives and an equal number of index persons at each centre. This sample size will allow robust estimates for the primary outcomes in each of the important categories of migrants.

Framework of surveys: Two types of surveys will be conducted in the study. The 'Relative identification survey' (RIS) will be administered to the factory employees and their co-resident spouses to establish their migration status and to identify suitable relatives to invite. The 'Clinical survey' (CS) will involve clinical examination of the invited relatives along with the index person. The RIS may be conducted at the factory or at the residence of the index person. The majority of the clinics will be conducted in the factory medical centre, with some peripheral camps where clusters of relatives reside. Appropriate reimbursement for will be offered to index persons and the relatives. Clinical examination will include questionnaire, anthropometry, blood pressure measurement, and fasting blood sample collection.

Timetable: The fieldwork is expected to take 18 months to complete (Jan 2005 to August 2006), with a further 6 months to analyse the data and write-up the results (study end date Dec 2006).

Table 1. Main outcome measures and study instruments

Outcome	Instrument/method	Comments
Diet & physical activity		
Diet	Food frequency quest. (single recoding)	Recall over last year; 8 separate FFQs (urban/rural, 4 sites)
Physical activity	Activity frequency quest. (single recording)	Recall over last month
Physical activity	Vertical accelerometers (single reading)	Actigraph Model 7164; 5% random sample only
Anthropometry		
Standing height	Portable stadiometer (single reading)	Leicester height measure; at end expiration
Sitting height	Above, seated on a stool (single reading)	Local stool; above with feet dangling
Weight	Digital weighing machine (single reading)	Model PS16, Beurer (Germany); minimal clothing, no shoes
Waist circumference	Metallic tape (two readings)	Narrowest part of waist observed from the front
Hip circumference	Metallic tape (two readings)	Maximum extension of the buttock observed from the side
Mid-arm circumference	Metallic tape (two readings)	Mid-upper arm on the left arm
Calf circumference	Metallic tape (two readings)	Maximum calf circumference on the left leg
Triceps skinfold	Holtain skinfold caliper (three readings)	Same level as MAC; Left arm; 5 seconds delay for all skinfolds
Subscapular skinfold	Holtain skinfold caliper (three readings)	Just below inferior angle of scapula, 45 degree angle, Left side
Medial calf skinfold	Holtain skinfold caliper (three readings)	Medial side of left calf viewed from front, same level as calf circ.
Vascular physiology		
Blood pressure	Systolic & diastolic (two readings)	Omron M5-I; Sitting, right upper arm; small/medium/large cuffs
Pulse rate	Beats per minute (two readings)	Omron M5-I; Sitting, right upper arm; small/medium/large cuffs
Room temperature	Digital thermometer (single reading)	Taiwan model
Biochemistry		
Haemoglobin		
Blood group		
Fasting sugar	Randox kit/Autoanalyser	At site, with 10% repeat assay at AIIMS for all biochemistry
Fasting triglycerides	Randox kit/Autoanalyser	
Total cholesterol	Randox kit/Autoanalyser	
HDL-cholesterol	Randox kit/Autoanalyser	
Fasting insulin	Radioimmunoassay	

Study staff and their responsibilities
The team at each centre will consist of team leader, medical officer, four fieldworkers, laboratory technician, data entry operator, and peon. In addition, two of the centres (Lucknow and Hyderabad) will have a sociologist on site to conduct qualitative work.

Team leader
- Overall responsibility for the performance of the team
- Deliver recruitment targets and ensure data quality and completeness
- Coordinate day-to-day running of the study (plan activities of other staff, surveys, clinics, and camps)
- Manage budget and supervise record keeping
- Procure equipment and consumables on time, and ensure their maintenance
- Contribute to questionnaire completion
- Develop links with the factory management
- Report to the local PI/ study coordinator in Delhi

Medical officer
- Measure blood pressure
- Collect blood samples in case laboratory technician has difficulty or is unavailable
- Communicate results of medical examination and offer advice to the participants
- Manage any medical emergencies or referrals that may be required
- Liaise with the factory Medical Officer and the local PI

Fieldworkers (X4)
- Involved in all aspects of the fieldwork including questionnaire completion, anthropometry, and blood pressure measurement (if required)
- Involved in all aspects of participant recruitment including carrying out of home visits, making travel and stay arrangements, sending invitation letters and making phone calls
- Organise clinics and camps, maintain equipment and records
- Report to the Team Leader

Laboratory technician
- Collect blood samples and ensure timely and accurate processing/analyses of samples
- Maintain equipment and necessary supplies of consumables
- Arrange transport of samples and quality control with the coordinating laboratory in Delhi
- Report to the Team Leader and Dr Lakshmy in Delhi

Data entry operator
- Data entry and check data completion, maintain databases
- Enter census codes on the questionnaires using special software
- Generate and print labels and lists for fieldwork, send postal invitations to participants and help with phone calls
- Maintain records and paperwork, progress spreadsheets, electronically transmit the required files at timely intervals
- Report to the Team Leader

Peon

- Help and support the activities of the team
- Set up clinics and organise the flow of participants and arrange refreshments

Sociologist (at Lucknow and Hyderabad)

- Collect data relating to the qualitative aspects of the study
- Stay in factory's township, try to spend short periods (1-2 weeks) with participating families
- Look for opportunities to visit rural relatives and spend 1-2 weeks with them in their villages (especially in cluster areas from where many employees originate)

Relative identification survey

This survey will be conducted by the fieldworkers and will involve the completion of the relative identification questionnaire (RIQ) (Appendix 1). Questionnaire will be administered to the factory employees (identified through lists provided by the factory management) and their co-resident spouses (identified at the time of completion of questionnaire with the factory employees).The survey will be conducted in the factory premises or at the homes of the employees as appropriate. Only about half the population will be surveyed in the first instance to analyse the data relating to the categories of migrants and relatives, and make changes to the protocol if necessary. For ease of operations, the local teams should try to identify natural cleavages in the workforce (such as different units of the factory) such that it splits the study population in roughly half.

Survey steps

A relative identification survey visit by the fieldworker will entail the following steps:
Step 1. Introduce yourself
Step 2. Explain the purpose of the visit as explained in the information sheet (Appendix 2)
Step 3. Seek permission to complete the questionnaire at the same time, and if unwilling ask for a convenient time/place to return. Also enquire about the presence of a co-resident spouses and seek permission to contact them. Where possible, request for a common time convenient to both the employee and spouse
Step 4. Complete the RIQ on the index participant. During this interview, establish the migration status of the participant and availability of a suitable relative.
Step 5. If a suitable relative is available, ask the index person is he/she is willing to be involved in the study (i.e. by allowing contact with the relative and being prepared to undergo clinical examination if relative does the same). If so, agree on the most acceptable arrangements for contacting the relative and further follow up of relative/index person for clinic appointment.

IMPORTANT NOTE. There are two circumstances under which the relative **SHOULD NOT** be invited in the first instance. Always check these before extending the invitation:

1) Factory worker or spouse is one of multiple relatives (spouse/sibling/first cousin) working in the same factory (established through the questionnaire). If so, explain to the index person that the protocol allows for only one of the multiple relatives to be invited. This can be established only at base by comparing the times of RIQ completion for a set relatives (the one with the earliest timing will be recruited), and that you will return at a later date. On arriving back at base, the RIQ should NOT be entered on database but filed separately. On completion of RIS in the entire factory, the team leader will go through sets of related RIQs, and only one of the set will be included in the study.

2) If the migration status of the index person is established to be urban non-migrant (UNM), check the cover of the RIQ to see if it is marked (25% of RIQ will be marked beforehand at random). If so marked, invite the relative as usual. If not, explain to the index person that only a sub-sample of UNM are being invited by lottery and he/she is not one of them, and thank them for their time.

Identification of appropriate relative

The flow chart in Figure 1 provides the basis for establishing the most suitable relative to invite. There are three levels of selection, with each level sitting within the level immediately above (i.e. the selection criteria in any level are applied when more than individual are eligible on the basis of the criteria in the level above it).

1) Level 1 (Closest in relationship)
    i) Full sibling, followed by
    ii) First cousin, followed by
    iii) Friend
2) Level 2 (Closest in place of origin)
    i) Same place (i.e. same name of village/town/city), followed by
    ii) Similar type of place (i.e. rural or urban)
3) Level 3 (Closest in sex-age)
    i) Same sex, followed by
    ii) Closest age

Recruitment of relatives

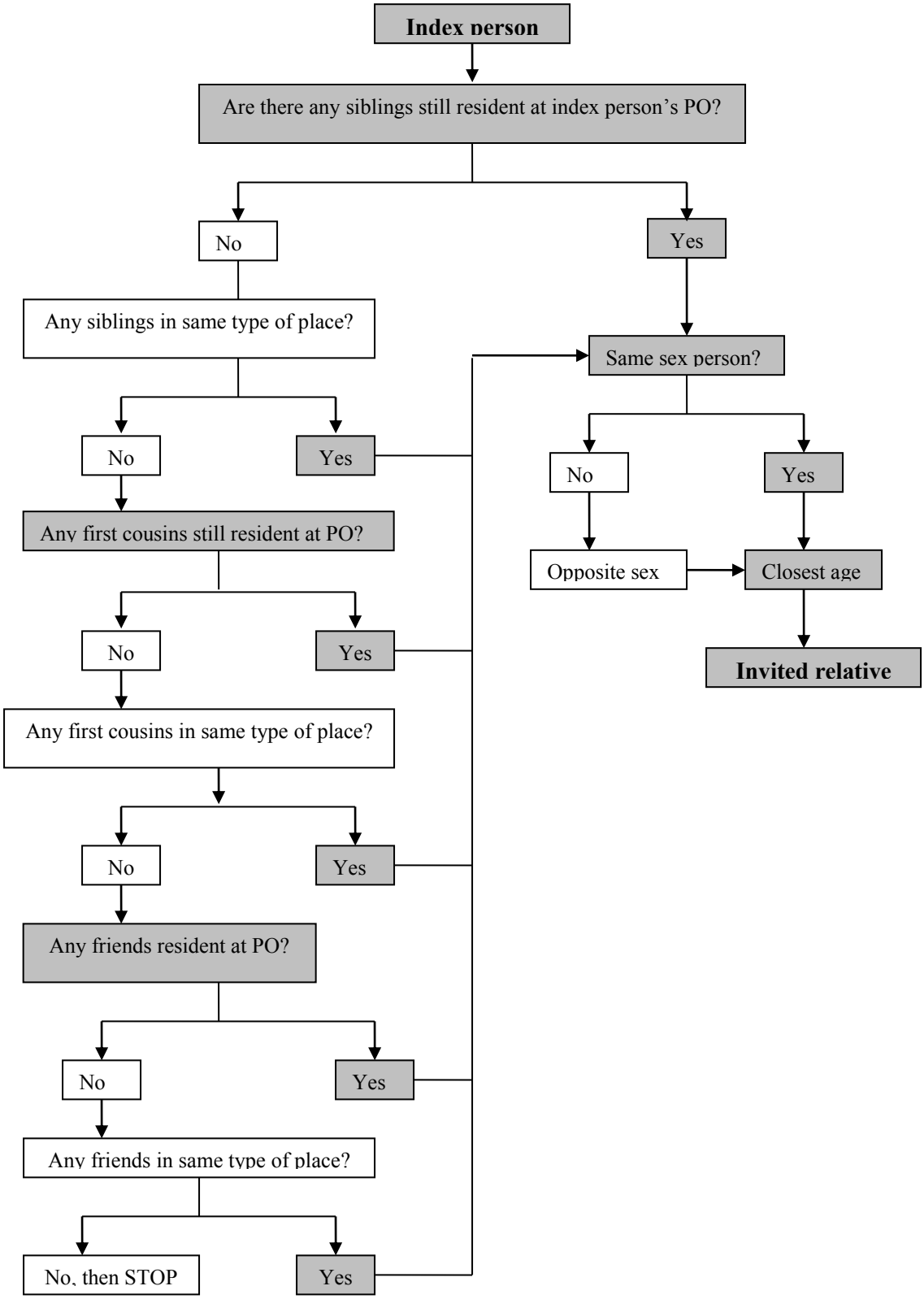
Invitation for clinic

All selected relatives will be sent a postal invitation. The invitation packet will be sent by registered post, and will include a letter of invitation, a pictorial diagram of the process, and a self-addressed reply postcard (Appendix 3). Where telephone numbers are available, telephonic contact should be made 1-2 weeks after the expected date of receipt of the package. The index persons should also be encouraged to contact their invited relatives through post/telephone or other personal means. For this, they should be offered use of study team's telephone or reasonable reimbursement (such as STD phone charges) as appropriate. Attempts may also have to be made to establish contact through personal visits to those who live within a reasonable distance (within 1-2 hours of driving distance). Where no contact is established by the above means, two further postal reminders will be sent at monthly intervals.

Travel and stay of relatives

Travel and stay will be reimbursed according to the plan below. For stay, three options are available to the relative: make their own arrangements, stay with the index participant, or ask the study team to make arrangements for them. The relative will be asked to indicate their preferred option in the reply envelope for clinic appointment. For the first two options, reimbursement should be offered according to the given scale either to the relative or the index participant as appropriate. At the outset of the study, teams at each of the centres should also try to negotiate a subsidised rate with a local hotel in return for using them for stay of the relatives. The daily rate for hotel accommodation should be in the same range or a little higher than direct reimbursement offered to the relative, and should be made directly to the hotel.

Figure 1. Flow chart to identify suitable relative to invite



Reimbursement of participants

The level of reimbursement was arrived at using the following principles. Understanding of these principles may be useful at times for clarification, or in unusual circumstances where an appropriate level needs to be calculated. However, these do not need to be routinely explained to the participant, and reimbursement should be offered, as far as possible, on a lump sum basis using the suggested scales. In case there is doubt about the correct scale, please err on the higher side remembering that participants are volunteers, under no obligation to participate.

Principles:

- Participants are classed as follows
    a) Index person (factory employee or spouse)
    b) Intra-city relative (relatives resident in the same city as the clinic) (this may vary in case of local camps)
    c) Day-travel relative (relative living outside the city but up to 2.5 hours travel time from the clinic)
    d) Overnight stay relative (living between 2.5 – 6 hours travel time from clinic; thus needing to be away from home for up to 2 days)
    e) Long-distance relative (relative living beyond 6 hours travel from the clinic; thus needing to be away from home for up to 4 days)
- Loss of daily wage will be reimbursed @ Rs 200/- per day. Single day reimbursement should be offered to all (whether they take a day off or not), including index persons. Up to 2 (overnight stay relative) and 4 days (long distance relative) reimbursement is offered to those needing to be away from home for longer than a day.
- Travel allowance is offered @ Rs 100 (intra-city travel), Rs 200 (day-travel), Rs 300 (overnight-stay), and Rs 400 (long-distance travel). Travel fares are for second-class travel. Where travel fare exceeds Rs 400, excess amount should be reimbursed on production of ticket/receipt.
- Allowance for accommodation is offered @ Rs 200 per night (typically one night for overnighters and two nights for long-distance travellers, for a maximum of 2 nights). This reimbursement is offered either to the relative (if the relative makes his/her own stay arrangement) or the index person (if the index person hosts the relative); alternatively nothing is offered if the study team provides accommodation.
- Food allowance is offered @ Rs 100 per day. This is offered to day-travel (1 day), overnight-stay (2 days) and long-distance (4 days) relatives. For overnight stay, one day's food allowances each for travel and stay (stay food allowance given to relative/index person as appropriate). For long distance, two days food allowance is for travel and two days for stay (hence given to relative/index person as appropriate).
- The lump sums are calculated as follows
    a) Intra-city relative (Rs 200/- wage loss plus Rs 100/- travel fare)
    b) Day-travel relative (Rs 200/- wage loss plus Rs 200/- travel fare plus Rs 100/- food on the way)
    c) Overnight-stay relative (Rs 400/- for loss of 2 days wages plus Rs 200/- travel fare plus Rs 100/- food on the way plus Rs 200/- for one night's accommodation plus Rs 100/- for one day's food)

d) Long-distance relative (Rs 800/- for loss of 4 days wages plus Rs 400/- travel fare plus Rs 200/- for 2 days food on the way plus Rs 400 for two nights accommodation plus Rs 200/- for two days food)

- All payments should be based on DISTANCE FROM THE ACTUAL CLINIC SITE AND NOT THE FACTORY

Reimbursement scale:

1) **Factory worker: Rs 200/-**
2) **Intra-city relative: Rs 300/-**
3) **Day-travel relative: Rs 500/-**
4) **Overnight-stay relative: Rs 1,000/-** (Rs 700/- for travel/wage loss plus Rs 300/- for food-accommodation given to relative/index person/neither as appropriate)
5) **Long-distance relative: Rs 2,000/-** (Rs 1,400/- for travel/wage loss plus Rs 600/- for food-accommodation given to relative/index person/neither as appropriate)

Proof of identity

It is important that some proof of identity is available for the relative that confirms the relationship and place of residence of the relative. This requirement will be explained in the invitation letter. Examples of proof of identity include the ration card, voting card, work identity card, driving or other license, or letter from the village head. The relatives will be requested to bring a photocopy along with the original. The photocopy should be checked against the original and retained for record. If the relative brings the original but forgets the photocopy, the study team should get a photocopy made locally (the money for this can be claimed back). Where the relative forgets to bring a proof along, they should still be recruited, but only after asking suitable questions to the index person and the relative to confirm the identity. This will have to be done in a very careful manner to avoid upsetting the the participants. In such cases the participants should be asked to post a photocopy of the proof after their return home, and they should be chased up for this if necessary. Where no proof becomes available, this fact should be recorded in the database.

Clinical survey

Factory clinics

The majority of the clinics will be held at the factory site, generally at the factory hospital. Participants will be asked to come fasting. As a result, clinics will have to start early, say 8:00 AM. The clinic team will have to arrive half an hour before the time given to the first participant to make arrangements. The following steps provide a guide (Figure 2).

1) Step 1. Team arrive half an hour before time given to the first participant. Peon arranges for the refreshments. Fieldworkers set up the equipment and conduct daily calibrations.
2) Step 2. Participants arrive and are received by the Peon. Peon arranges for them to wait in the waiting area and takes them to the Team Leader/Fieldworker/Doctor who checks their identity. The participant's name label is fixed on a prepared file folder and the questionnaires contained within it. Photocopy of proof of identity is saved in the folder. In case the participant has brought only the originals but not the photocopy, the participant or the Fieldworker/Peon/Team Leader may have to go and get photocopies made (best done in batches rather than for each individual). Following this, the participant moves between different stations with the folder that has all the relevant questionnaires.
3) Step 3. The Team Leader/Doctor explains the study using the prepared information sheet and takes consent. After consent, the participant is directed towards the laboratory technician.

4) Step 4. The laboratory technician collects the blood samples, seeking help from the Doctor in difficult cases. After collecting all the blood samples, the laboratory technician heads back to the laboratory to carry on with processing and analyses of the samples.
5) Step 5. Participant is offered refreshment by the peon after the blood sampling.
6) Step 6. Fieldworker completes questionnaire followed by anthropometry. If participant prefers to save time, the questionnaire could be completed while the participant is having refreshments. It may be more convenient for one fieldworker to conduct anthropometry examinations on a given day while the others complete the questionnaires.
7) Step 7. Participant moves to the Blood pressure station where the Doctor/Fieldworker measures blood pressure.
8) Step 8. After this the participant has a medical consultation with the Doctor. At this station, a report and general health advice is given to the participant and any queries answered. In case the Doctor is also taking the blood pressure, the two stations may be the same.
9) Step 9. Team Leader/Fieldworker/Doctor collects the folder and checks for missing data items, recalling the patient if necessary. After this, the patient is thanked for his/her participation and reimbursed after collecting any receipts if relevant and signatures of the participant that he/she has been reimbursed.
10) Step 10. Peon sees off the participant.
11) Step 11. After the participants have left, the equipment is stored away as necessary and the paperwork for the day filed away.
12) Step 12. The Fieldworkers with the help of the Team Leader/Database person prepare list of participants and folders for the next day. The Laboratory Technician prepares the venepuncture material, labels and transport box for the next day.
13) Step 13. The Team Leader may have to spend much of the day planning and organising fieldwork, and in activities related to participant requirement (phone calls, letters etc).
14) Step 14. The Database person will support the Team Leader, manage database, generate labels and letters, and enter questionnaires. In particular, the database person will try to enter the census codes for places in completed questionnaires, in real time as far as possible so that they can be checked with the relatives before they leave the clinic or the city.

Camps

If a number of relatives are found to be clustered (typically more than five) in a particular area, camps will be organised. The need, frequency and venue for camps will be decided locally. Camps are generally expected to last for a day, and the team should be able to return on the same day. However, overnight stay may be required at times to cover areas that are further away. Travel (typically car hire) and accommodation for the team will be reimbursed. The entire team may travel to the camp if many participants were expected. Alternatively, part of the team may be left behind for other duties or if participants are also expected at the factory clinic.

Camps will need to be planned carefully to avoid wasted trips. Prior arrangements will have to be made to identify suitable venue for clinic. A visit on the day before the camp may have to be carried out by the team (or alternative arrangements made through some village person) to remind participants about fasting and to check once more the arrangements for the camp. An important issue to bear in mind is the transport for blood samples as the samples may get destroyed in transit due to long delay in processing, heat or shaking during journey. Centrifuge at site before transfer may be the solution for which centrifuge machine may have to be carried, checking beforehand about the local availability of electricity and hours of power supply. Arrangements with local laboratories for centrifugation and perhaps assays may have to be considered, especially when the camps are expected to last longer than a day. When in doubt and in all cases where alternate

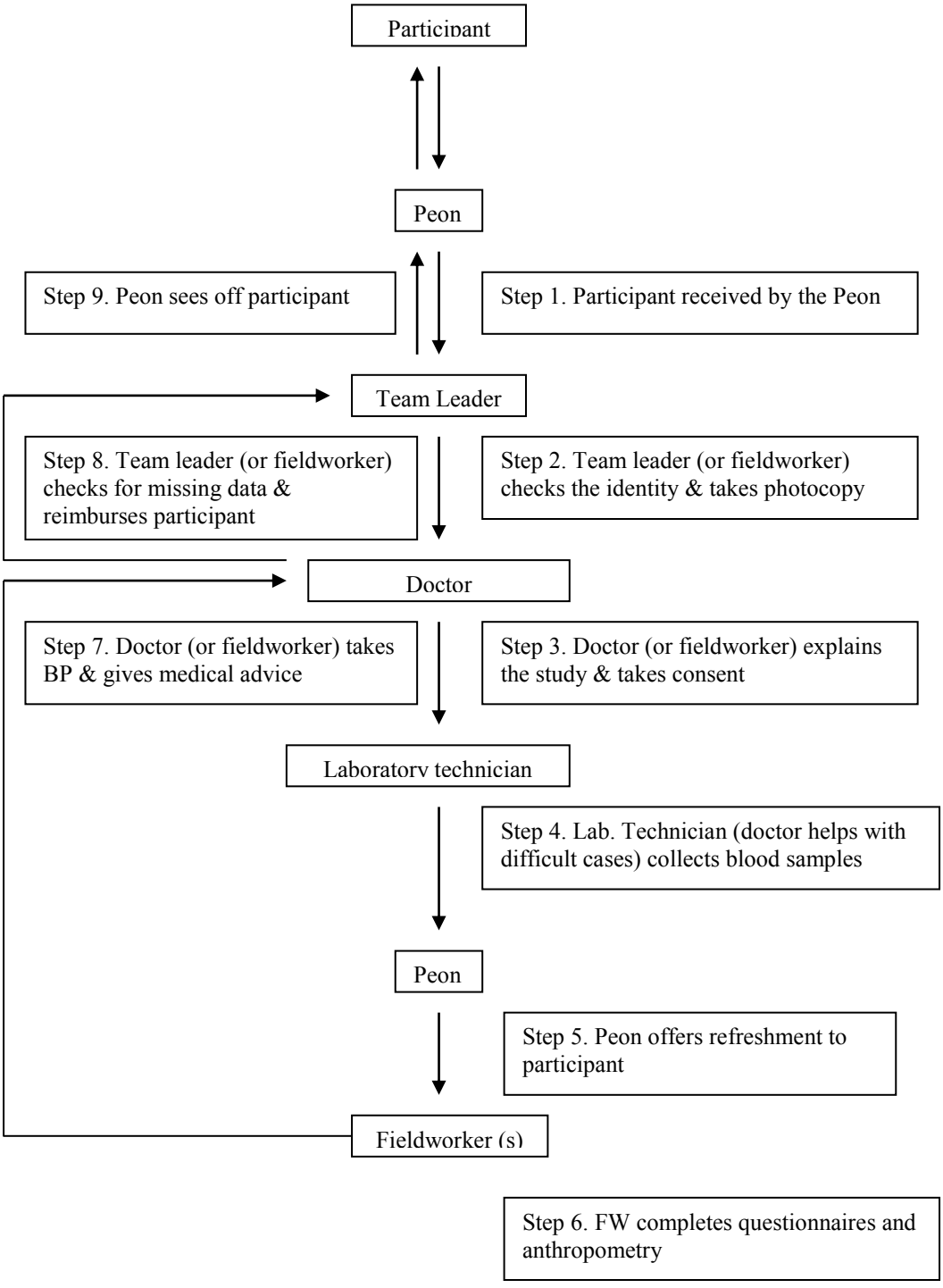
arrangements are being considered, it is extremely important that advice is sought beforehand from the central biochemistry laboratory. Possible damage during transport due to heat or excessive shaking is also relevant for anthropometry and blood pressure equipment. Care must be taken to minimise damage by carefully packing the equipment or carrying delicate equipment in lap, avoiding direct exposure to sun or water, or leaving equipment lying around in places (such as by the window or in the car) where they could be exposed rain or temperature could get high. At the time of setting up clinic, the equipment must be carefully checked, much more than usual, to ensure that they are working correctly prior to taking any measurements.

On the day of the camp the team members will need to arrive earlier than usual to allow adequate time for setting up the clinic. The team may also have to bring the participants either personally to the camp or arrange for some other form of transport to pick them. This is to ensure punctuality and prevent wastage of camp time. For their return the participants may be offered appropriate transport fares or arrangements made. The running of the clinic should essentially remain the same. However, greater care will have to be taken in setting up the equipment, especially ensuring that the surface where the stadiometer and weighing machine are placed is flat.

Clinical examination of index participants

Clinical examination will be conducted on all selected relatives and the related index persons. It is important to remember that the data on the index persons cannot be used without the relatives. Therefore to avoid collecting data that cannot be used, it is advisable to conduct, wherever possible, clinical examination on both the relative and the index person at the same time. It may also be preferable to the relatives too to be examined together. In circumstances where it is difficult to stick to this approach (for example when index person is not available at the same time or the clinic is busy with relatives), the index person may be examined later. But every attempt should be made to ensure that the time period between the examinations of index persons and relatives is short, within a month wherever possible, and certainly within 2 months. This is because there can be seasonal variations between measurements, and if the time gap between two related individuals is too long, than we are not comparing like for like.

Figure 2. Clinic operations



Timeline and monitoring of study progress
The study will be conducted in three phases:

Phase 1: Study awareness and promotional campaign
The aim of this phase of the study is to make the factory workers and management aware and supportive of the study. This phase is extremely important, as effort put into this phase will allow for smooth and efficient running of the study.
Activities may include:

- Meet the industry management and with relevant groups such as workers union, local residential groups or clubs etc
- Stick posters explaining the study in appropriate sites such as factory campus and hospital, factory residential colonies, etc
- Having special talk sessions in the factory hospital, related schools or canteen at lunchtime, and opportunistically using any festival related or other gatherings
- Such activities should include not only lectures but also have discussion so as to give opportunity to the workers to clarify their doubts. The Doctor in the team will have an important role in this phase
- Have items in the factory or other local newspapers or leaflets
- Important that all such activities are carried out with consent of the hospital management and due involvement of the industry medical officer and management

Duration of Phase 1: 2 months (mid-January 2005 to mid-March 2005)

Phase 2: Relative identification survey (first half)
The aim of this phase is to administer the RIQ to industry workers and spouses. It is expected that the team will be able to complete 50 such questionnaires per day (approximately 10 per person per day). Over 20 survey days a month, the team should be able to complete 1,000 questionnaires per month, achieving the expected total of around 2,000 (half the index person sample; around 1,500 employees, the rest spouses) in 2 months. Since the initial period overlaps with phase 1, an additional half-month is added to the duration.
Duration of Phase 2: 2.5 months (mid-February 2005 to April-end 2005)

Phase 3: Clinical survey
This phase involves the clinics. Clinics are expected to begin in May. Fewer relatives may be willing to come in the initial months due to student exams (March-April) and harvest season (March-May). The expected daily recruitment rate is 8 (4 relatives and 4 index persons), which will allow for 160 participants to be recruited per month at each of the centres (2,240 over 14 months in each centre). It is anticipated that these rates will have important seasonal fluctuations. However, wherever possible, attempts should be made to spread the recruitment over the study period. The lean periods for clinics can be used to complete the remaining half of the relative identification survey. An additional period of two months has been added to this to cover the time required for reliability studies.
Duration of Phase 3: 14 months (May 2005 to August-end 2006)

Phase 4: Relative identification survey (first half)
The need for this phase and the type and level of participant recruitment will be guided by the results of the second and third phase. This phase could be fitted in anytime over the study duration, but preferably during periods when fewer participants are available for clinics.

Validity and reliability of measurements

Selection of sample for Validity measurements

Induction Training programme

Training programme repeats

On-site monitoring and evaluations

Induction of new members of staff during the course of the study

Equipment issues

Calibrations schedule

Data sheets for validity-reliability

Indian Migrants Study: Relative identification questionnaire (RIQ) completion instructions

	Interview details		*Instructions*
1.1	Date of quest. completion	___ ___ / ___ ___ / ___ ___ [DD/MM/YY]	
1.2	Time of quest. completion	☐☐ : ☐☐ [Hours: minutes; 24-hour clock]	Must be entered as it will be used to pick the first of multiple factory relatives; use 24 hour clock
1.3	Interviewer code	☐☐	Each centre to give codes starting from '1' to each of the team members
1.4	Interviewer initials	☐☐☐	These should decided at the start of the study and used consistently (e.g. don't flip between 2/3 alphabets
1.5	Study factory employee	☐ [1=Yes; 2=No]	
	Factory relatives (This section should be completed ONLY for study factory employees; leave BLANK for spouse):		
2.1	Do you and your spouse have a relative (spouse, sibling or first cousin) who also works in this study factory?	☐ [1=Yes; 2=No]	
	If yes, please provide details:		

2.2	(a) Surname	(b) Forename	(c) Date of birth [DD/MM/YY]	(d) Age (Yrs)	(e) Relation [1=Spouse; 2=Sibling; 3=F Cousin]	Complete the date of birth to the extent known (i.e. only month/year) and leave the rest blank; age is in completed years and must be completed (best guess if appropriate)
			__ __/__ __/__ __			
			__ __/__ __/__ __			
			__ __/__ __/__ __			
			__ __/__ __/__ __			
			__ __/__ __/__ __			

	Personal contact details		
3.1	Family name	_____ [Surname]	
3.2	First name/middle name	_____[Forename/other name]	Forename followed by middle name if any
3.3	Current house address (if any) [House No./Street/Locality]	_____ _____	This relates to person's current residence defined as place where the person spent most nights in the 12 months preceding the interview
3.4	Place name	_____ [Name of Village/Town/City]	
3.5	PIN Code	☐☐☐☐☐☐	6 digit postal information code; first digit can be 1-8

3.6	Sub-district	_____ [Tehsil/Taluk/Mandal]	Names of sub-district vary according to state; these three cover the four states in the study, for other states prompt the subject by appropriate name (see list at the back)
3.7	District	_____	
3.8	Nearest railway station	_____	Railway station closest to the place and not the main junction.
3.9	Nearest big town	_____ [In case of village only]	
3.10	State/UT	_____ [Name of country if abroad]	Total 35, see list at the back if unsure.Do not use abbreviations for state/UT.
3.11	Type of place	☐ [1=Village; 2=Town; 3=Small city; 4=Large city]	Ask the subject; if unsure, negotiate on the basis of the definition provided; for large city, confirm from the list at the back if unsure (35 large cities); include urban outgrowths
3.12	Travelling by road or rail, total average journey time between this place and the industry	☐☐☐ [In completed hours]	One way total journey time
3.13	Census code	☐☐☐☐☐☐☐☐☐☐	To be completed at base, leave blank

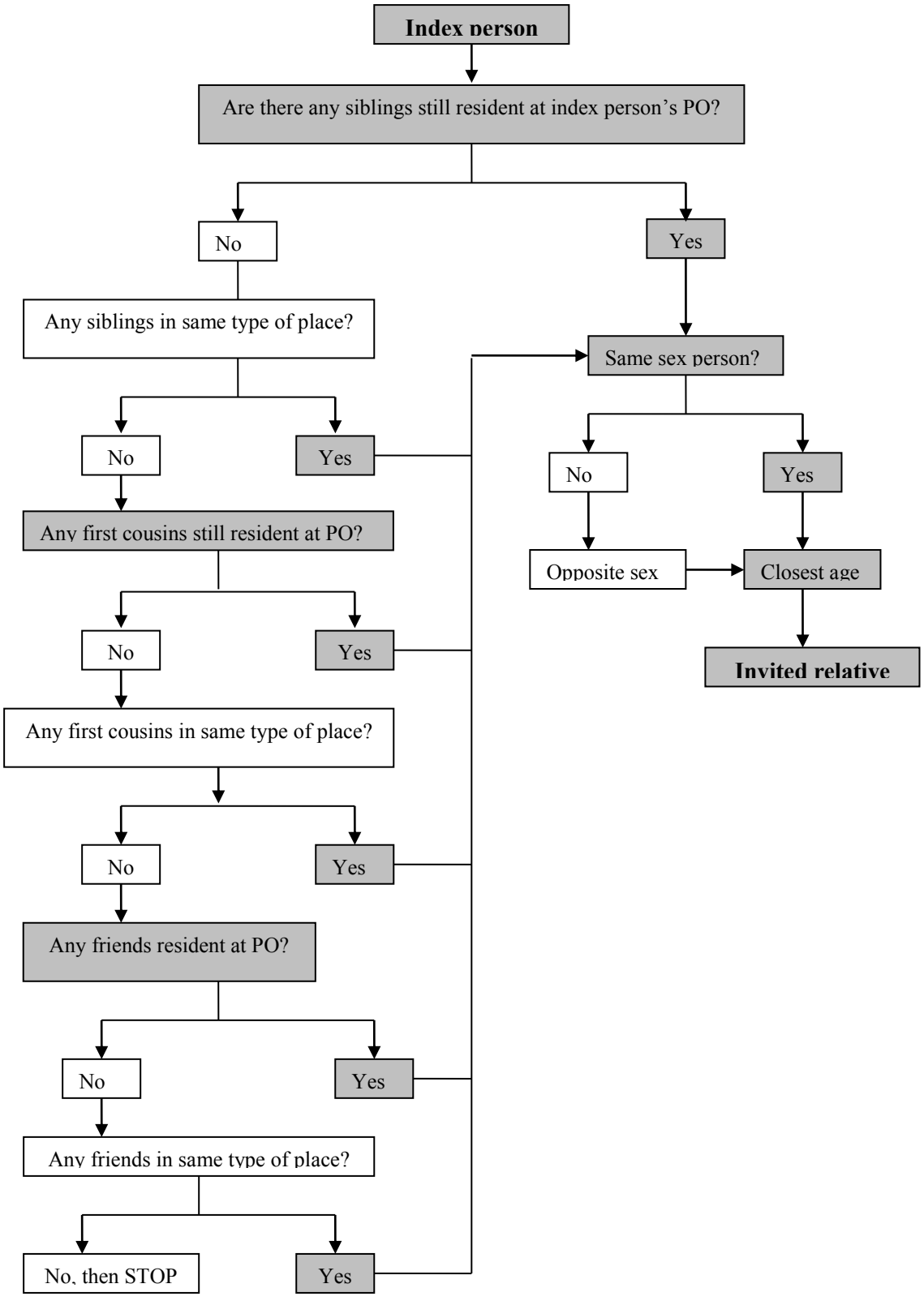
3.14	Home telephone number (landline)	(☐☐☐☐) ☐☐☐☐☐☐☐☐ [Area code] [Phone number]	
3.15	Mobile number	☐☐☐☐☐☐☐☐☐☐	
	Personal details		
4.1	(a)Age last birthday	☐☐ [In completed years]	Wherever age not known,this can be approximated by relating to important events like year of independence, major calamities etc.
	(b) Date of birth	☐☐/ ☐☐/ 19 ☐☐ [Complete to extent known]	
4.2	Sex	☐ [1=Male; 2=Female]	
4.3	Primary occupation	☐	
	[1=At home doing housework; 2=Unemployed, not seeking work (student/training/retired/disabled; 3=Unemployed, seeking work; 4=Unskilled manual ;5=Semi-skilled manual ;6=Skilled manual; 7=Skilled non-manual; 8=Semi-Professional;9=Professional] (For activities under each category, please refer to page no. 4 on the Field Worker Booklet).		Check in the detailed list at the back if unsure
4.4	What religion do you follow?	☐ [1=Hinduism; 2=Islam; 3=Sikhism; 4=Christianity; 5=Jainism; 6=Buddhism; 7=Others; 8=None]	Enter 'none' if the person does not follow any religion
4.5	Do you currently chew pan masala or tobacco or smoke?	☐ [1=Yes; 2=No]	Only relates to current consumption here

4.6	In your knowledge, have you ever suffered from high blood pressure, heart disease, diabetes (high blood sugar) or stroke (paralytic attack)?	☐ [1=Yes; 2=No]	If the person does not know, enter 'No'. This question relates to person's understanding and disease does not have to be 'doctor diagnosed'.
4.7	Current marital status	☐ [1=Never married; 2=Currently married; 3=Widow/widower; 4=Separated/divorced]	If the person is married but 'gauna' (wife coming to stay with the husband) not performed, enter as 'Never married'
4.8	If currently married, does your spouse normally live with you? ☐ [1=Yes; 2=No]		
4.9	If yes, please provide details:		
	(a) Family name (if different)	_____ [Surname]	
	(b) First name/middle name	_____ [Forename/other name]	
	(c) Age	☐☐ [In completed years]	
	(d) Date of birth	☐☐/ ☐☐/ 19 ☐☐ [Complete to extent known]	
4.10	May we contact your spouse for the purposes of this study	☐ [1=Yes; 2=No]	
4.11	If yes, contact notes (i.e. best time and place to contact spouse)	_____ _____ _____	
	Migration status		

	About your place of origin (PO): [Place (village/town/city) where you spent majority of your time during first five years of life (this need not necessarily be place of birth)]		
5.1	Name of place	_____ [Village/Town/City]	
5.2	Sub-district	_____ [Tehsil/Taluk/Mandal]	
5.3	District		
5.4	Nearest railway station		
5.5	Nearest big town	_____ [In case of village only]	
5.6	State/UT	_____ [Name of country if abroad]	
5.7	Type of place (at that time)	☐ [1=Village; 2=Town; 3=Small city; 4=Large city]	This should be according to how the subject remembers the place to be at the time, not now
5.8	Travelling by road or rail, total average journey time between this place and the industry	☐☐☐ [In completed hours]	
5.9	Census code	☐☐☐☐☐☐☐☐☐☐	
5.10	**Type of migrant**	☐ [1=RUM; 2=RNM; 3=URM; 4=UNM]	Decided on the combination of place of origin and place of current residence
5.11	If migrant (RUM/URM), at what age did you make your first permanent (longer than a year) move?	☐☐ [Yrs]	Age in completed years
5.12	If urban non-migrant (UNM), does the sticker indicate inclusion to the study?		
	Please apply the sticker here:		

	Sibling information					
6.1	Number of live siblings	☐☐ [Enter 00 for None]				
	If any, please provide following information for each of the siblings (starting from the eldest):					
6.2	(a) Initials	(b) Age (Yrs)	(c) Sex [1=M; 2=F]	(d) Residence type [1=Vill; 2=Town; 3=S city; 4=L city]	(e) Index PO [1=Yes; 2=No]	Continue overleaf if more than the space provided
	☐☐☐	☐☐	☐	☐	☐	Residence type is current
	☐☐☐	☐☐	☐	☐	☐	Index PO relates to exactly the same village/town/city
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	
	☐☐☐	☐☐	☐	☐	☐	

Figure 1. Flow chart to identify suitable relative to invite



	Subject status:	
7.1	Does this person have an eligible relative?	☐ [1=Yes; 2=No]
7.2	If yes, is this person willing to participate in the study?	☐ [1=Yes; 2=No]

	STATUS FLAGS TO INDICATE STUDY INCLUSION:	
	STATUS FLAG 1 (FOR RUM/RNM/URM):	☐ **[1=Yes; 2=No]**
	This flag may be set to Yes only when ALL of the following criteria are met:	
	(a) Type of migrant is RUM or RNM or URM	Q 5.10 = 1 or 2 or 3
	(b) Person has an eligible relative	Q 7.1 = 1
	(c) Person is willing to participate in the study	Q 7.2 = 1
	STATUS FLAG 2 (FOR UNM):	☐ **[1=Yes; 2=No]**
	This flag may be set to Yes only when ALL of the following criteria are met:	
	(a) Type of migrant is UNM	Q 5.10 = 4
	(b) Person has an eligible relative	Q 7.1 = 1
	(c) Person is willing to participate in the study	Q 7.2 = 1
	(d) Sticker indicates inclusion to the study	Q 5.12 = 1

7.3	**Index person: Clinic visit details**				
	(a) Start date of period [DD/MM/YY]	(b) End date of period [DD/MM/YY]	(c) Venue [1=Factory; 2=Camp]	(d) Travel [1=Self; 2=Team]	(e) Outcome [1=Yes; 2=No]
	__ __/__ __/__ __	__ __/__ __/__ __	☐	☐	☐
	__ __/__ __/__ __	__ __/__ __/__ __	☐	☐	☐
	__ __/__ __/__ __	__ __/__ __/__ __	☐	☐	☐
7.4	**Index person: Notes**				

	Invited relative No. 1		
8.1	Relationship to the index person	☐ [1=Sibling; 2=First cousin; 3=Other]	All relatives other than sibling or first cousin should be categorised as 'Other' along with friends
8.2	Resident in the index person's PO	☐ [1=Yes; 2=No]	
	Contact details		
8.3	Family name		
8.4	First name/middle name	[Forename/other name]	
8.5	House address (if any) [House No./Street/Locality]		
8.6	PIN Code	☐☐☐☐☐☐	
8.7	Home telephone number (landline)	(☐☐☐☐) ☐☐☐☐☐☐☐☐ [Area code] [Phone number]	
8.8	Mobile number	☐☐☐☐☐☐☐☐☐☐	
	Place information (if different from the index person's PO)		
8.9	Place name		
8.10	Sub-district		
8.11	District		
8.12	State/UT		
8.13	Nearest railway station		

8.14	Nearest big town	_____ [In case of village only]			
8.15	Type of place (at present)	☐ [1=Village; 2=Town; 3=Small city; 4=Large city]			
8.16	Travelling by road or rail, total average journey time between this place and the industry	☐☐☐ [In completed hours]			
8.17	Census code	☐☐☐☐☐☐☐☐☐☐			
	Personal details				
8.18	Age last birthday	☐☐ [In completed years]			
8.19	Sex	☐ [1=Male; 2=Female]			
8.20	Current marital status	☐ [1=Never married; 2=Currently married; 3=Widow/widower; 4=Separated/divorced]			
8.21	Primary occupation	☐			
	[1=At home doing housework; 2=Unemployed, not seeking work (student/training/retired/disabled; 3=Unemployed, seeking work; 4=Unskilled manual ;5=Semi-skilled manual ;6=Skilled manual; 7=Skilled non-manual; 8=Semi-Professional;9=Professional]				
	Contact details				
8.22	(a) Date of contact [DD/MM/YY]	(b) Type of contact [1=Post; 2=Phone; 3=Personal visit; 4=Index person; 5=Other]	(c) Outcome [1=Agreed; 2=Refused; 3=Dead]	(d) Date of review [DD/MM/YY]	Include the first contact here (e.g. if the index person offers to contact and find out)
	__ __/__ __/__ __	☐	☐	__ __/__ __/__ __	
	__ __/__ __/__ __	☐	☐	__ __/__ __/__ __	

8.23	**Contact notes**					
8.24	**Clinic visit details**					
	(a) Start date of period [DD/MM/YY]	(b) End date of period [DD/MM/YY]	(c) Venue [1=Factory; 2=Camp]	(d) Travel [1=Self; 2=Team]	(e) Outcome [1=Yes; 2=No]	Start and end dates of period relate to time over which the relative is expected to arrive at the clinic e.g. if the person is expected anytime in the month of august, enter start and end dates for the month
	__ __/__ __/__ __	__ __/__ __/__ __				Travel relates to whether the subject has agreed to make his/her own travel/stay arrangements or if the team has to make part/all of the arrangements
	__ __/__ __/__ __	__ __/__ __/__ __				
8.25	**Clinic visit notes**					

Indian Migrants Study: SECTIONA: Clinic questionnaire (CQ) completion instructions

	Summary sheet (to be completed at time of reimbursement)					**Instructions**
	Component completed					This section should be completed at the end just before the subject departs, generally at the time of reimbursement
1.1	(a) Consent form	(a) Clinical quest.	(c) Diet quest.	(d) Medical exam.		
	☐ [1=Yes; 2=No]	☐ [1=Yes; 2=No]	☐ [1=Yes; 2=No]	☐ [1=Yes; 2=No]		
	Reimbursement					
1.2	Reimbursement given	☐ [1=Yes; 2=No]				Subject's signatures should be taken on receipt
1.3	Identity proof taken	☐ [1=Yes; 2=No]				Proof should be copied & filed away
	Subject recall					
1.4	Subject needs to be recalled	☐ [1=Yes; 2=No]				
1.5	Reason for recall	☐ [1=Repeatability study; 2=Incomplete study; 3=Both]				Repeatability studies will be done on random 5% sample
1.6	If yes, is the subject willing to return?	☐ [1=Yes; 2=No; 3=Undecided]				
1.7	If undecided, date status will be reviewed:	__ __/__ __/__ __ [DD/MM/YY]				
1.8	**If recalled, clinic visit details**					
	(a) Start date of period [DD/MM/YY]	(b) End date of period [DD/MM/YY]	(c) Venue [1=Factory; 2=Camp]	(d) Travel [1=Self; 2=Team]	(e) Outcome [1=Yes; 2=No]	Start and end dates of period relate to time over which the relative is expected to arrive at the clinic e.g. if the person is expected anytime in the month of august, enter start and end dates for the month

	__ __/__ __/__ __	__ __/__ __/__ __				Travel relates to whether the subject has agreed to make his/her own travel/stay arrangements or if the team has to make part/all of the arrangements
	__ __/__ __/__ __	__ __/__ __/__ __				
1.9	**Summary sheet notes**					

	Interview details		
2.1	Date of quest. completion	___ ___ / ___ ___ / ___ ___ [DD/MM/YY]	
2.2	Time of quest. completion	☐☐ : ☐☐ [Hours: minutes; 24-hour clock]	Must be entered; use 24 hour clock
2.3	Interviewer code	☐☐	Each centre to give codes starting from '1' to each of the team members
2.4	Interviewer initials	☐☐☐	These should decided at the start of the study and used consistently (e.g. don't flip between 2/3 alphabets
	First of all I would like to collect some details about you and where you live at present		
	Contact details		
3.1	Family name	_____ [Surname]	

3.2	First name/middle name	_____[Forename/other name]	Forename followed by middle name if any
3.3	Current house address (if any) [House No./Street/Locality]	_____ _____	This relates to person's current residence defined as place where the person spent most nights in the 12 months preceding the interview
3.4	Place name	_____ [Name of Village/Town/City]	
3.5	PIN Code	☐☐☐☐☐☐	6 digit postal information code; first digit can be 1-8
3.6	Sub-district	_____ [Tehsil/Taluk/Mandal]	Names of sub-district vary according to state; these three cover the four states in the study, for other states prompt the subject by appropriate name (see list at the back)
3.7	District	_____	
3.8	Nearest railway station	_____	Railway station closest to the place and not the main junction.
3.9	Nearest big town	_____ [In case of village only]	
3.10	State	_____ [Name of country if abroad]	Total 35, see list at the back if unsure
3.11	Type of place	☐ [1=Village; 2=Town; 3=Small city; 4=Large city]	Ask the subject; if unsure, negotiate on the basis of the definition provided; for large city, confirm from the list at the back if unsure (35 large cities); include urban outgrowths
3.12	Travelling by road or rail, total average journey time between this place and the industry	☐☐☐ [In completed hours]	One way total journey time
3.13	Census code	☐☐☐☐☐☐☐☐☐☐	To be completed at base, leave blank

3.14	Home telephone number (landline)	(☐☐☐☐) ☐☐☐☐☐☐☐☐ [Area code] [Phone number]	
3.15	Mobile number	☐☐☐☐☐☐☐☐☐☐	
3.16	Were you born and lived here all your life?	☐ [1=Yes; 2=No]	Regard answer as 'No' if either of the two parts of the question is 'No'
	.		If a person had an institutional birth in another place and returned home straight from the institution, enter home place as the residence (rather than place of institution)
			If person was born at maternal grandparents home and returned to mother's usual residence at age of 2 months, enter maternal grandparents place as the first row of residence and '00' for age when moved. If the person has since stayed in the same place, no further rows should be completed.
			Continue at back of sheet if more than total space provided
4.1	ABOUT YOUR BIRTHPLACE		
	(a) Place name_____ (b) Sub-district_____ (c) District_____		
	(d) Nearest railway station_____ (e) Nearest town_____ (f) State/UT_____		
	(g) Age at leaving: ☐☐ [Yrs] (h) Type of place: ☐ [1=V; 2=T; 3=SC; 4=LC] (i) Census code: ☐☐☐☐☐☐☐☐ ☐☐		

	Between your birthplace and current place of residence, if you have lived anywhere for longer than a year, please list all such places in order up to but not including the current residence (DO NOT include moves within the same place i.e. village/town/city). Enter age at leaving the place in completed years (enter 00 for age less than a year). Type of place relates to at THAT TIME. WRITE IN BLOCK CAPITALS.
4.2	(a) Place name_____ (b) Sub-district_____ (c) District_____
	(d) Nearest railway station_____ (e) Nearest town_____ (f) State/UT_____
	(g)) Age at leaving: ☐☐ [Yrs] (h) Type of place: ☐ [1=V; 2=T; 3=SC; 4=LC] (i) Census code: ☐☐☐☐☐☐☐☐ ☐☐
	(a) Place name_____ (b) Sub-district_____ (c) District_____
	(d) Nearest railway station_____ (e) Nearest town_____ (f) State/UT_____
	(g)) Age at leaving: ☐☐ [Yrs] (h) Type of place: ☐ [1=V; 2=T; 3=SC; 4=LC] (i) Census code: ☐☐☐☐☐☐☐☐ ☐☐

	Now I would like to collect some personal information about you		
	Personal details		
5.1	Age last birthday	☐☐ [In completed years]	
5.2	Date of birth	☐☐ [DD]	Leave blank if unknown
5.3	Month of birth	☐☐ [MM]	
5.4	Year of birth	19 ☐☐ [YY]	
5.5	Sex	☐ [1=Male; 2=Female]	
5.6	(a) How many siblings (alive) do you have?	☐☐ [Enter 00 if None]	Only for alive siblings
	(b) Of these, how many are older than you?	☐☐ [Enter 00 if None]	
5.7	Current marital status	☐ [1=Never married; 2=Married; 3=Widow/widower; 4=Separated/divorced]	
5.8	If ever married:		
	(a) How old when you started living with your spouse after your marriage (first)?	☐☐ [Age in completed years]	
	(b) Does your spouse normally live with you now?	☐ [1=Yes; 2=No]	DO NOT ASK THOSE WITH MARITAL STATUS 3/4
	How many (live) children do you have?		Only alive children
	(c) Boys: ☐☐ [Enter 00 for None]	(d) Girls: ☐☐ [Enter 00 for None]	
5.9	What religion do you follow?	☐ [1=Hinduism; 2=Islam; 3=Sikhism; 4=Christianity; 5=Jainism; 6=Buddhism; 7=Other; 8=None]	Enter 'none' if the person does not follow any religion

5.10	People from different castes cook their food differently, which can affect their health. Do you mind telling the name of your caste/tribe? If not, What is the name of your caste/tribe? _____		Enter actual name as given by subject
5.11	Is this a scheduled caste/tribe/other backward caste?	☐ [1=Scheduled caste; 2=Scheduled tribe; 3=Other backward class; 4=None of them]	
5.12	(a)What is your mother tongue?	☐☐	Language spoken in childhood by person's mother to the person. If mother died in infancy/hearing-speech disorders/any other doubt, language spoken in person's household.
	[1=Assamese; 2=Bengali; 3=Gujarati; 4=Hindi; 5=Kannada; 6=Kashmiri; 7=Konkani; 8=Maithili; 9=Malayalam; 10=Marathi; 11=Oriya; 12=Punjabi; 13=Sindhi; 14=Tamil; 15=Telugu; 16=Urdu; 17=Other, specify below]		
	(b) If other, specify	_____	
	Primary occupation		
5.13	(a) Respondent: ☐	(b) Spouse (if married): ☐	
	[1=At home doing housework; 2=Unemployed, not seeking work (student/training/retired/disabled; 3=Unemployed, seeking work; 4=Unskilled manual ;5=Semi-skilled manual ;6=Skilled manual; 7=Skilled non-manual; 8=Semi-Professional;9=Professional]		
5.14	Briefly describe your job: _____		Enter short description of person's job
	Highest educational level attained		
5.15	(a) Respondent: ☐	(b) Spouse (if married): ☐	
	[1=Illiterate; 2=Literate, no formal education; 3=Up to primary school (class IV); 4=Secondary school (ITI course, class X/XII, Intermediate); 5=Graduate (BA, BSc, BCom, Diploma); 6=Professional degree/postgraduate (MA, MSc, MBBS, MSW, BTech, PhD)]		
	Now I am going to ask you some questions about your household		

	Current household circumstances		Questions below refer to a household. It is important to define the household before proceeding with the following questions. A household is a group of people (related or unrelated) who live together and take their meals together from a common kitchen unless the exigencies of work prevent them from doing so. The key element is kitchen.
6.1	What kind of household do you currently live in?	☐	
	[1=Single; 2=Hostel; 3=Nuclear family (married couple & offspring); 4=Extended family (two related married couples of different generations (i.e. married couple with one of the parents); 5=Joint family (two related married couples from same generation (i.e. two married siblings); =6Joint-extended; 7=Any other]		A hostel here refers to any institutional household (group of unrelated persons taking their meal from a common kitchen). Persons living in a common building but not taking their meals from a common kitchen are classed as single/family type as appropriate. Common kitchen refers to joint cooking, not just sharing of a room used as kitchen).
6.2	(a) Including yourself, how many people usually live in your household?	☐☐	
	(b) Of these, how many are aged 18 years or above?	☐☐	
	(c) Of those aged 18 years or above, how many are literate (can read and write)?	☐☐	
6.3	How many rooms are there in your household? (count all rooms including kitchen, bathroom, etc)	☐☐	Include rooms normally available for use to the person. In case of person living in a hostel with access to a shared kitchen, common room and bathroom, this number would be three.
6.4	What is the material used in the construction of the house?	☐	

	[1=Kutcha (made from mud, thatch, or other low quality material); 2=Semi-pucca (partly low quality and high quality material); 3=Pucca (high quality material used throughout including roof, walls, floor)]		
6.5	What is the main source of lighting for your household?	☐ [1=Electricity; 2=Kerosene; 3=Gas; 4=Oil; 5=Other]	
6.6	What is the main source of drinking water for members of your household?	☐ [1=Pipe, hand pump or well (in residence/yard/plot); 2=Pipe, hand pump or well (public); 3=Other]	
6.7	What kind of toilet facility does the household have?	☐	
	[1=Own flush toilet; 2=Shared flush toilet; 3=Public flush toilet; 4=Own pit toilet/latrine; 5=Shared pit toilet/latrine; 6=Public pit toilet/latrine; 7=No facility/field/bush; 8=Other]		Community latrine (sulabh-sauchalay) is 'public latrine' while common latrine available to multi-household houses is 'shared latrine'.
6.8	Does this household own any agricultural land?	☐ [1=Yes; 2=No]	In case of institutional household (hostel), complete only for that individual
6.9	Do you collect rations from a ration card?	☐ [1=Yes; 2=No]	
6.10	**Does the household own any of the following:**		Availability for use (e.g. provided by the employer) should be regarded as yes.
	(a) Clock/Watch	☐ [1=Yes; 2=No]	
	(b) Radio/Transistor	☐ [1=Yes; 2=No]	
	(c) Television	☐ [1=Yes; 2=No]	
	(d) Bicycle	☐ [1=Yes; 2=No]	
	(e) Motorcycle/scooter/moped	☐ [1=Yes; 2=No]	

	(f) Car	☐ [1=Yes; 2=No]	
	(g) Tractor	☐ [1=Yes; 2=No]	
	(h) Refrigerator	☐ [1=Yes; 2=No]	
	(i) Telephone	☐ [1=Yes; 2=No]	
	Now thinking back to when you were a child, say 10-12 years old, please answer the following questions about the household where you lived at that time		
	Household circumstances in childhood (at age 10-12 years)		
7.1	What was your father's occupation at the time?	☐	
	[1=At home doing housework; 2=Unemployed, not seeking work (student/training/retired/disabled; 3=Unemployed, seeking work; 4=Unskilled manual ;5=Semi-skilled manual ;6=Skilled manual; 7=Skilled non-manual; 8=Semi-Professional;9=Professional]		
7.2	What was the highest educational level attained by your mother?	☐	
	[1=Illiterate; 2=Literate, no formal education; 3=Up to primary school (class IV); 4=Secondary school (ITI course, class X/XII, Intermediate); 5=Graduate (BA, BSc, BCom, Diploma); 6=Professional degree/postgraduate (MA, MSc, MBBS, MSW, BTech, PhD)]		
7.3	Were there any literate (can read and write) adults (aged 18 years or above) in your household?	☐ [1=Yes; 2=No]	
7.4	What was the material used in the construction of the house?	☐	
	[1=Kutcha (made from mud, thatch, or other low quality material); 2=Semi-pucca (partly low quality and high quality material); 3=Pucca (high quality material used throughout including roof, walls, floor)]		
7.5	What was the main source of lighting for your household?	☐ [1=Electricity; 2=Kerosene; 3=Gas; 4=Oil; 5=Other]	For multiple sources, record the predominant one

7.6	What was the main source of drinking water for members of your household?	☐ [1=Pipe, hand pump or well (in residence/yard/plot); 2=Pipe, hand pump or well (public); 3=Other]	For multiple sources, record the predominant one
7.7	What kind of toilet facility did the household have?		
	[1=Own flush toilet; 2=Shared flush toilet; 3=Public flush toilet; 4=Own pit toilet/latrine; 5=Shared pit toilet/latrine; 6=Public pit toilet/latrine; 7=No facility/field/bush; 8=Other]		
7.8	Did the household own any agricultural land?	☐ [1=Yes; 2=No]	
7.9	**Did the household own any of the following:**		
	(a) Clock/Watch	☐ [1=Yes; 2=No]	
	(b) Radio/Transistor	☐ [1=Yes; 2=No]	
	(c) Television	☐ [1=Yes; 2=No]	
	(d) Bicycle	☐ [1=Yes; 2=No]	
	(e) Motorcycle/scooter/moped	☐ [1=Yes; 2=No]	
	(f) Refrigerator	☐ [1=Yes; 2=No]	
	Now one question about your body size when you were around 10-12 years old.		
7.10	What were you like then?	☐	
	[1=Very thin;2=Thinner than average; 3=Average; 4=Fatter than average; 5=Very fat]		
	One final question about your housing circumstances, now or anytime in the past. Do you know what a slum looks like? If yes: *(if no, please explain the definition to the subject and then ask the question below)*		
	Current or past residence		

7.11	Have you ever lived in a slum for longer than 6 months?	☐	This should be as stated by the subject in the first instance. If the subject is unsure, agree on the basis of definition provided in the protocol. Question may have to be put carefully to those from upper social strata.
	[1=No, never; 2=Used to but not anymore (moved out over 6 months ago); 3=Yes, and still do (anytime in the last 6 months)]		
	Now I will ask you a few questions about your health and lifestyle		
	Health and lifestyle		
8.1	Have your ever used tobacco on a daily basis?		
	(a) Smoked (e.g. Cigarette/ Beedi/ Cigar/ Pipe/ Hukka/ Chillum)	☐	
	(b) Chewed (e.g. Tobacco/ Paan masala/ Zarda/ Khaini))	☐	Important to ask specifically about paan masala and zarda as the subject may not be aware that it contains tobacco.
	(c) Snuffed	☐	
	[1=No, never; 2=Yes, but don't anymore (stopped over 6 months ago); 3=Yes, and still do (anytime in the last 6 months)]		
8.2	Have you ever consumed alcoholic beverages regularly (i.e. at least 10 days a month)?	☐	
	[1=No, never; 2=Yes, but don't anymore (stopped over 6 months ago); 3=Yes, and still do (anytime in the last 6 months)]		
8.3	Compared to others of your age, would you say your health over the last 12 months has been:	☐ [1=Very good; 2=Good; 3=Average; 4=Poor; 5=Very poor]	

	(a) In your knowledge, have you ever suffered from any of the following conditions? THIS NEED NOT BE DOCTOR DIAGNOSED.		(b) If yes, age when known (otherwise leave blank)	If the person does not know, enter 'No'. This question relates to person's understanding and disease does not have to be 'doctor diagnosed'.
8.4	High blood pressure	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.5	Heart disease	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.6	Diabetes (high blood sugar)	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.7	Stroke (paralytic attack)	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.8	Tuberculosis	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	First case of infection, in case of multiple
8.9	Asthma	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.10	Peptic ulcer	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.11	Thyroid problem	☐ [1=Yes; 2=No]	☐☐ [Age in completed years]	
8.12	Are you on any medication on a regular basis?		☐ [1=Yes; 2=No]	
	If yes:			
8.13	(a) Name of medicine	(b) Reason for taking it (name of condition)		
	_____	_____		
	_____	_____		
	_____	_____		
	_____	_____		
	_____	_____		

	Now some questions about your beliefs and feelings		
	Your beliefs		
9.1	If you had a choice, where would you prefer to live?	☐ [1=Village; 2=Town; 3=Small city; 4=Large city]	
9.2	What is the primary reason for this preference?	☐	
	[1=Economic/employment; 2=Availability of services (education/ leisure/healthcare/accessibility); 3=Family & other social ties; 4=Physical environment (housing/fresh air); 5=Way/speed of life; 6=Other, specify below]		
9.3	Other reason for place preference: _____		
9.4	**In your opinion**, how much education should be given to girls these days?		
	[1=No education; 2=Literacy, but no formal education; 3=Up to primary school; 4=Secondary school; 5=Graduate; 6=Professional; 7=As much as she desires; 8=Depends; 9=Don't know]		
9.5	**In your opinion,** should women wear western style dresses (e.g. jeans/tee-shirts)?	☐	
	[1=No, never; 2=Wear at home but not outside; 3=Wear outside but not at home; 4=Wear at home & outside; 5=Don't know]		
9.6	How often do you visit a place of worship outside home?	☐	
	[1=Never; 2=Less than once a month; 3=More than once a month but less than once a week; 4=At least once a week]		
9.7	In an average week, how many days do you eat together as a family?	☐ 0-7	
9.8	Do you think more and more people getting fat nowadays? ☐ [1=Yes; 2=No; 3=Don't know]		
9.9	If yes, what are the important reasons for this change:		
	(a) Less active lifestyle	☐ [1=Yes; 2=No; 3=Don't know]	
	(b) Eating more food in general	☐ [1=Yes; 2=No; 3=Don't know]	

	(c) Eating more unhealthy food (e.g. sweet/oily/fatty)	☐ [1=Yes; 2=No; 3=Don't know]	
	(d) Food available is adulterated	☐ [1=Yes; 2=No; 3=Don't know]	
	(e) Eating outside of home more often	☐ [1=Yes; 2=No; 3=Don't know]	
	(f) Eating together as a family less often	☐ [1=Yes; 2=No; 3=Don't know]	
	(g) Any other reason not mentioned above	_____	
9.10	*About your feelings now, how often do you feel:*		
		[1=Not at all; 2=Rarely; 3=Sometimes; 4=Often; 5=All the time]	
	(a) Lonely	☐	
	(b) Missing friends and family	☐	
	(c) Missing home comforts	☐	
	(d) Insecure, stressed or anxious	☐	
	(e) Frightened	☐	
	(f) Tearful	☐	
	(g) Sleepless	☐	
	(h) Loss of appetite	☐	
	(i) Loss of interest in usual activities	☐	
	(j) Difficulty in concentrating	☐	
	Since you have moved from a village to a town/city, I would like to ask you some questions related to that.		
	To be completed for rural-urban migrants only		
10.1	People can have many reasons for moving from village to live in a town or city. What was the most important reason in your case?	☐	

	[1=Absolute lack of livelihood opportunity in rural area; 2= Better economic prospects/promotion in urban area; 3= Better availability of services (educational/ leisure/ healthcare / accessibility); 4= Social discrimination (caste); 5=Personal security (personal/ political reasons); 6= Social reasons (to be with family & friends/ marriage); 7=Natural disaster (floods/drought); 8=No clear reason/don't know; 9=Any other reason not in the list (enter below)]		
10.2	Any other important reason not covered: _____		
	Thinking about when you first moved to the town/city		
10.3	How long did it take for you to feel at home/feel you belong/feel you are accepted in the WORKPLACE?	☐	
	[1=Immediately; 2=Few weeks; 3=Few months; 4=More than a year; 5=Still don't;6=NA]		
10.4	How long did it take for you to feel at home/feel you belong/feel you are accepted in this TOWN/CITY?		
	[1=Immediately; 2=Few weeks; 3=Few months; 4=More than a year; 5=Still don't]	☐	
10.5	*Still thinking back to when you first moved to the town/city, did you feel:*		
		[1=Not at all; 2=Rarely; 3=Sometimes; 4=Often; 5=All the time]	
	(a) Lonely	☐	
	(b) Missing friends and family	☐	
	(c) Missing home comforts	☐	
	(d) Insecure, stressed or anxious	☐	
	(e) Frightened	☐	
	(f) Tearful	☐	

	(g) Sleepless	☐	
	(h) Loss of appetite	☐	
	(i) Loss of interest in usual activities	☐	
	(j) Difficulty in concentrating	☐	
10.6	If married, after how much time did your spouse move to live with you?	☐☐☐ [In completed months; leave blank if unmarried/spouse did not move]	Complete only for those with a current co-resident spouse. Should be completed for those who were unmarried at the time of moving (in that case the time refers to time between getting married and the spouse moving to person's house)
10.7	Now thinking about your NATIVE PLACE (place of origin), what do you feel about the following:		
		[1=Nothing at all; 2=Little; 3=Some; 4=Strong; 5=Very strong]	
	(a) Emotional attachment	☐	
	(b) Respect from people there	☐	
10.8	During the preceding 2 years, how much time have you spent at your place of origin/other rural area?	☐ [1=None; 2=Less than 2 weeks; 3=Between 2-6 weeks; 3=More than 6 weeks]	Add total over multiple visits
10.9	Do you send back regular (e.g. at least yearly) remittances to your family?	☐ [1=Yes; 2=No; 3=Not applicable]	

	Blood sampling			
11.1	Any illness within the last week?		☐ [1=Yes; 2=No]	
11.2	If yes, specify what illness: _____			
11.3	Was this illness or some other reason responsible for reduction in food intake over the last week?		☐ [1=No reduction; 2=Minor reduction; 3=Major reduction]	
11.4	Day of last meal	☐ [1=Today; 2=Yesterday]		
11.5	Time of last meal	☐☐ : ☐☐ [Hours: minutes; 24-hour clock]		
11.6	Time blood taken	☐☐ : ☐☐ [Hours: minutes; 24-hour clock]		
	Success in blood sampling			
		(a) Volume [1=No; 2=Partial; 3=Complete]	(b) Clot formation [1=Yes; 2=No]	
11.7	Red capped tube	☐	☐	
11.8	Purple capped tube	☐	☐	
11.9	Grey capped tube	☐	☐	
11.10	Purple capped tube 2	☐	☐	
11.11	(a) Any other comments about blood sample	☐ [1=Yes; 2=No]		
	(b) If yes, specify	_____		

	Weight and height		
12.1	Weight	☐☐☐ . ☐ [kg]	
12.2	Weighing machine number	☐	All instruments will be numbered beforehand.
12.3	Standing height	☐☐☐☐ [mm]	
12.4	Stool height	☐☐☐☐ [mm]	
12.5	Sitting height	☐☐☐☐ [mm]	
12.6	Stadiometer number	☐	
	Circumferences		
12.7	Waist circumference 1	☐☐☐☐ [mm]	
12.8	Waist circumference 2	☐☐☐☐ [mm]	
12.9	Hip circumference 1	☐☐☐☐ [mm]	
12.10	Hip circumference 2	☐☐☐☐ [mm]	
12.11	Mid-arm circumference 1	☐☐☐☐ [mm]	
12.12	Mid-arm circumference 2	☐☐☐☐ [mm]	
12.13	Calf circumference 1	☐☐☐☐ [mm]	
12.14	Calf circumference 2	☐☐☐☐ [mm]	
	Skinfold measurements		

12.15	Triceps skinfold 1	☐☐.☐ [mm]	
12.16	Triceps skinfold 2	☐☐.☐ [mm]	
12.17	Triceps skinfold 3	☐☐.☐ [mm]	
12.18	Subscapular skinfold 1	☐☐.☐ [mm]	
12.19	Subscapular skinfold 2	☐☐.☐ [mm]	
12.20	Subscapular skinfold 3	☐☐.☐ [mm]	
12.21	Calf skinfold 1	☐☐.☐ [mm]	
12.22	Calf skinfold 2	☐☐.☐ [mm]	
12.23	Calf skinfold 3	☐☐.☐ [mm]	
12.24	Caliper number	☐	
	General information: anthropometry measurements		
12.25	Researcher code	☐☐	
12.26	Researcher initials	☐☐☐	
12.27	Left sided measurements	☐ [1=Yes; 2=No]	
12.28	If not, specify	_____	

12.29	All measurements adequate	☐ [1=Yes; 2=No]	Adequacy refers to any problems in taking the reading that could affect their validity e.g. bandage or any obvious deformity. Where problems arise, every effort should be made it overcome them (i.e. remove bandage if possible) rather than simply proceeding with recording as such measurements are largely useless.
12.30	If not, specify	_____	

	Blood pressure		
13.1	Researcher code		
13.2	Researcher initials		
13.3	Room temperature		
13.4	Systolic BP 1	☐☐☐ [mmHg]	
13.5	Diastolic BP 1	☐☐☐ [mmHg]	
13.6	Pulse rate 1	☐☐☐ [bpm]	
13.7	Systolic BP 2	☐☐☐ [mmHg]	
13.8	Diastolic BP 2	☐☐☐ [mmHg]	
13.9	Pulse rate 2	☐☐☐ [bpm]	
13.10	Cuff size used	☐ [1=Small; 2=Medium; 3=Large]	

13.11	BP apparatus number	☐	
13.12	Right arm measurements	☐ [1=Yes; 2=No]	
13.13	Measurements adequate	☐ [1=Yes; 2=No]	Examples of inadequacy may include person appearing to be extremely anxious. Again time should be spent reassuring subject instead of recording inadequate measurements.
13.14	If not, specify	_____	
	Accelerometer		
14.1	**Accelerometer No**	☐☐	
14.2	Date of initiation	___ ___ / ___ ___ / ___ ___ [DD/MM/YY]	
14.3	Time of initiation	☐☐ : ☐☐ [Hours: minutes; 24-hour clock]	
14.4	Date of termination	___ ___ / ___ ___ / ___ ___ [DD/MM/YY]	
14.5	Time of termination	☐☐ Hours ☐☐ Minutes	
14.6	Comments	_____ _____	

SECTION B: Physical activity questionnaire (PAQ)

	Now I will ask you questions relating to your daily activity as this will help us to determine how active you are. Please answer these questions with respect to your activities over last ONE MONTH.			
	Work related activity			
1.1	How many days in a week do you work?		☐ [In completed days]	
1.2	On an average, how many hours per day do you spend at work?		☐☐.☐ [In completed half hours]	
1.3	**Of the hours you spend at work, how many hours do you spend in (completed half hours):**			
	(a) **Standing:** Activities such as talk, lab work, supervise, mild cleaning, cattle grazing done standing.	(b) **Sitting:** Activities such as typing, computer work, cleaning grains, eating lunch, driving, ironing, done sitting etc	(c) **Walking**: walking around, strolling	(d) **On activities more strenuous than walking**: Fetch water/ fuel, fooder. weeding, chop wood, ploughing, pounding rice, walking with a load.
	☐☐.☐ [hours]	☐☐.☐ [hours]	☐☐.☐ [hours]	☐☐.☐ [hours]
1.4	**If you spend any time at work on activities more strenuous than walking, please list the activities that you do most in terms of time:**			
	(a)			
	(b)			
	(c)			
	(d)			
1.5	On an average, how many hours do you sleep in a day?		☐☐.☐ [Completed half hours]	
	Apart from work, how do you spend your time (over the last month): Frequency options: [1=Daily; 2=Once a week; 3=2-4 times/week; 4=5-6 times/week; 5=2-3 times/month; 6=Once a month]			
2.1	**Sports / games / exercise (for eg. walking, badminton, jogging, cricket……etc)**			
	(a) Name of activity	(b) Duration	(c) Frequency	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
2.2	**Hobbies involving manual labour (for eg. Carpentry, gardening ……etc.)**			
	(a) Name of activity	(b) Duration	(c) Frequency	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	
	_____	☐☐☐ [mts]	☐	

	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
2.3	**Household activities (for eg. sweeping, collecting fuel/fodder/water, animal care, cooking, washing child care……. etc.)**		
	(a) Name of activity	(b) Duration	(c) Frequency
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐

	Apart from work, how do you spend your time (over the last month): Frequency options: [1=Daily; 2=Once a week; 3=2-4 times/week; 4=5-6 times/week; 5=2-3 times/month; 6=Once a month]		
2.4	**Sedentary activities for e.g. Reading, watching TV, prayer, carom, computer games, travelling……. etc.)**		
	(a) Name of activity	(b) Duration	(c) Frequency
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	Other activities	(a) Duration	(b) Frequency
2.5	Eating (breakfast, dinner)	☐☐☐ [mts]	☐
2.6	Brushing, shaving & bathing	☐☐☐ [mts]	☐
2.7	Dressing	☐☐☐ [mts]	☐
2.8	Socialising (talking outside working hours)	☐☐☐ [mts]	☐
2.9	Travelling to and fro from work	☐☐☐ [mts]	☐
2.10	How do you travel to and fro from work?	_____	

SECTION C: Food Frequency Questionnaire (FFQ)

INSTRUCTION TO SUBJECT:

We are doing this study at a **national level** and there may be several food items in the list that you **may not have heard of** as they are eaten in other places. If you have not heard of an item please answer **"No".**

	CEREALS	**Portion Size**	**(a) Average consumption**	**(b) Per Day[1]**	**(b) Per Week[2]**	**(b) Per Month[3]**	**(b) Per Year / Never[4]**
1.1	Tandoor roti, phulkas, wheat phulkas	No					
1.2	Chapathis, parathas, naan	No					
1.3	Stuffed parathas, franky	No					
1.4	Rice roti	No					
1.5	Ragi roti	No					
1.6	Bajra, maize (makkai) roti	No					
1.7	Jowar roti	No					
1.8	Channa roti	No					
1.9	Poori, bhatura	No					
1.10	Plain rice	Bowl					
1.11	Vegetable pulao/ veg biriyani	Bowl					
1.12	Mutton, chicken pulao/biriyani	Bowl					
1.13	Lime rice, puliogare, curd rice , tomato rice	Bowl					
1.14	Bhagar	Bowl					
1.15	Bisibelebhath	Bowl					
1.16	Khichdi, khichri	Bowl					
1.17	Pongal	Bowl					
1.18	Upma	Bowl					
1.19	Plain ragi ball	No					
1.20	Ragi ball with rice	No					
1.21	Idlis	No					
1.22	Plain dosa, uthappam	No					
1.23	Masala dosa	No					
1.24	Pesarattu	No					
1.25	Poha, Laia	Bowl					
1.26	Avalakki, attakalu	Bowl					
1.27	Dalia	Bowl					

	CEREALS (contd)	**Portion Size**	**(a) Average consumption**	**(b) Per Day[1]**	**(b) Per Week[2]**	**(b) Per Month[3]**	**(b) Per Year / Never[4]**
1.28	Rice, ragi porridge	Bowl					
1.29	Vada, all types	No					
1.30	Corn flakes, cereal flakes etc.	Bowl					
1.31	Bread, Toast, Rolls, Buns	No					
1.32	Pizza, Burger	No					
1.33	Noodles, macaroni, pasta etc	Bowl					
	LENTILS / DHALS / GRAVIES						
2.1	Plain tur dhal sambar / dhal	Ladle					
2.2	Tur dhal sambar / dhal with vegetables	Ladle					
2.3	Other dhal sambhar /dhals	Ladle					
2.4	Channa, rajma, dry peas etc. curry	Ladle					
2.5	Green leafy vegetable curry	Ladle					
2.6	Paneer gravy	Ladle					
2.7	Rasam, all types	Ladle					
2.8	Kadhi	Ladle					
2.9	Besan	Ladle					
2.10	Mosaru huli	Ladle					
2.11	Bassaaru, uppusaaru	Ladle					
2.12	Mixed vegetable sagu	Ladle					
2.13	Bengal gram sambar/curry	Ladle					
2.14	Blackgram dhal curry	Ladle					
	CHUTNEYS / SALAD / PAPAD						
3.1	***Soups, all types (veg or non-veg)***	Bowl					
3.2	Fresh vegetable salad	Tbsp					
3.3	Hesarebele salad	Tbsp					
3.4	Vegetable Raitha	Tbsp					
3.5	Mango, lime pickle etc.	Tsp					
3.6	Papad	No					
3.7	Kachri	Bowl					
3.8	Sandige, vathal	No					
3.9	Coconut chutney	Tbsp					

	CHUTNEYS / SALAD / PAPAD (contd)	Portion Size	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year / Never[4]
3.10	Groundnut chutney	Tbsp					
3.11	Tomato chutney	Tbsp					
3.12	Chilli chutney	Tbsp					
3.13	Tamarind chutney	Tbsp					
3.14	Mango chutney	Tbsp					
3.15	Brinjal, ridgegourd,other vegetable chutney	Tbsp					
3.16	Gogu chutney	Tbsp					
3.17	Urad dhal chutney	Tbsp					
3.18	Varhadi Thecha	Tbsp					
3.19	Chutney powder	Tbsp					
	NON – VEGETARIAN						
4.1	Chicken curry	Bowl					
4.2	Chicken fry/grilled	No					
4.3	Mutton/ pork/beef curry	Bowl					
4.4	Mutton / beef/ pork / fry	No.					
4.5	Fish curry	Bowl					
4.6	Fish fry	No					
4.7	Organ meats (Liver, brain, kidney etc.)	Tbsp					
4.8	Prawn, crab, shell fish etc.	Bowl					
4.9	Egg (boiled, poached, omelettes)	No					
4.10	Mutton, chicken etc Kebabs	No					
4.11	Ham, salami, bacon etc.	Slices					
4.12	Pigeon	Bowl					
4.13	Other poultry (lave, titar, bater etc)	Bowl					
4.14	Rabbit	Bowl					
	MILK & BEVERAGES						
5.1	Tea	Glass					
5.2	Coffee	Glass					
5.3	Plain milk	Glass					
5.4	Flavored milk (horlicks, bournvita etc)	Glass					
5.5	Curd, yoghurt	Bowl					

	MILK & BEVERAGES (contd)	Portion Size	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year / Never[4]
5.6	Buttermilk/Lassi	Glass					
5.7	Fresh fruit juice(lime, orange etc)	Glass					
5.8	Fanta, pepsi, coca cola etc.	250ml bottle					
5.9	Beer	Glass					
5.10	Wine	Glass					
5.11	Spirits (whiskey, gin, rum)	30ml peg					
5.12	Local arrack/toddy	Glass					
5.13	Aam ka panna	Glass					
	MISCELLANEOUS						
6.1	Butter/ cream	Tsp					
6.2	Ghee	Tsp					
6.3	Jam	Tsp					
6.4	Sugar	Tsp					
6.5	Honey	Tsp					
6.6	Jaggery	Tsp					
6.7	Cheese	Cube					
6.8	Ketchup, tomato sauce	Tbsp					
	SNACKS/ SWEETS/DESSERTS						
7.1	Mixture, namkeen, chiwda, khara boondi, dalmoth	Tbsp					
7.2	Nuts (grounduts, cashewnuts etc.)	Tbsp					
7.3	Chips, French fries	Bowl					
7.4	Samosa,bajji ,bonda, cutlet, patties	No					
7.5	Veg & non-veg puff	No					
7.6	Biscuits (salted)	No					
7.7	Biscuits (sweet, creamed, etc)	No					
7.8	Bhel puri, masala puri, other chaats	Bowl					
7.9	Murukku , chakli, sakinalu	No					
7.10	Dhokla	No					
7.11	Pav bhaji	No					
7.12	Cakes or sweet pastries	No					
7.13	Payasam, kheer	Bowl					

	SNACKS/ SWEETS/DESSERTS (contd)	Portion Size	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year / Never[4]
7.14	Custard, puddings	Bowl					
7.15	Ice cream	Bowl					
7.16	Jamoon, Jilebi, Jangir etc.	No					
7.17	Mysore pak, ladoo, barfis	No					
7.18	Indian milk sweet (peda, rasgulla etc.	No					
7.19	All Halwas	Tbsp					
7.20	Puran poli, obattu/holige	No					
7.21	Shakarpara, balushahi, badusha	No					
7.22	Kesari bhath	Tbsp					
7.23	Kajjaya, karjikayi	No					
7.24	Kadubu	No					
7.25	Baksham, arisalu, poornalu	No					
7.26	Sweet pongal	Bowl					
7.27	Sonpapdi, kaju katli	No					
7.28	Gujiya	No					
7.29	Shirkurama	Bowl					
7.30	Shrikand	Bowl					
7.31	Dairy milk, 5 star, kitkat etc.	Small Bar					

	FRUITS	*Portion size*	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year/ Never[4]	(c) Seasonal (cross if seasonal)
8.1	Banana	No						
8.2	Apple	No						
8.3	Orange	No						
8.4	Sweet lime	No						
8.5	Mango	No						
8.6	Guava (amrood)	No						
8.7	Grapes (angoor)	Bowl						
8.8	Pineapple	Slice						
8.9	Papaya (papita)	Slice						
8.10	Pomegranate (anar)	No						

	FRUITS (contd)	*Portion size*	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year/ Never[4]	(c) Seasonal (cross if seasonal)
8.11	Sapota (Chikoo)	No						
8.12	Watermelon (tarbooj)	Bowl						
8.13	Musk melon (kharbooj)	Bowl						
8.14	Jackfruit	No						
8.15	Custard apple	No						
8.16	Plums	No						
8.17	Zizyphus (ber)	No						
8.18	Sugarcane (ganaa)	Pieces						
8.19	Litchis	No						
8.20	Pears	No						
8.21	Peaches	No						
8.22	Kiwi	No						
8.23	Jamoon	No						
8.24	Palmyra	No						
8.25	Amla	No						
8.26	Fruit salad	Bowl						
8.27	Dried fruits (dates, figs, raisins etc)	No						
	VEGETABLES							
9.1	Palak, methi, other leafy vegetables	Tbsp						
9.2	Potato, sweet potato	Tbsp						
9.3	Carrot	Tbsp						
9.4	Beetroot/ radish/ knol-khol	Tbsp						
9.5	Cabbage	Tbsp						
9.6	Beans, cluster beans	Tbsp						
9.7	Ladies finger	Tbsp						
9.8	Cauliflower	Tbsp						
9.9	Bottlegourd(lauki),ashgourd,Ridgegourd(turai), snakegourds, etc.	Tbsp						
9.10	Brinjal	Tbsp						
9.11	Mushrooms	Tbsp						
9.12	Fresh peas	Tbsp						
9.13	Pumpkin	Tbsp						

	VEGETABLES (Contd)	*Portion size*	(a) Average consumption	(b) Per Day[1]	(b) Per Week[2]	(b) Per Month[3]	(b) Per Year/ Never[4]	(c) Seasonal (cross if seasonal)
9.14	Parwal, kovai	Tbsp						
9.15	Capsicum or green pepper	Tbsp						
9.16	Drumstick	Pieces						
9.17	Raw plantain	Tbsp						
9.18	Colacasia (arvi)	Tbsp						
9.19	Jackfruit tender	Tbsp						
9.20	Dhemsa	Tbsp						
9.21	Kundru	Tbsp						
9.22	Tinda	Tbsp						
9.23	Lotus stem	Tbsp						
9.24	Chow chow marrow	Tbsp						
9.25	Yam	Tbsp						

10.1	How many liters of these oils / fats does your family consume in a month? (Kg /month)	
	(a) Sunflower oil	☐.☐
	(b) Groundnut oil	☐.☐.
	(c) Coconut oil	☐.☐
	(d) Palm Oil	☐.☐
	(e) Mustard oil	☐.☐
	(f) Dalda / vanaspathi	☐.☐
	(g) Butter	☐.☐
	(h) Ghee	☐.☐
	(i) Olive oil	☐.☐
	(j) Corn oil	☐.☐
	(k)Rice bran oil	☐.☐
	(l) Soya bean oil	☐.☐
	(m) Others	☐.☐

10.2	If others, please specify	_____
10.3	Do you routinely remove fat / skin from meat before cooking?	☐ [1=Yes; 2=No]
10.4	How many coconuts do you use for cooking in a month? (No / month)	☐☐
10.5	Do you add any of the following as a thickening agent for your curries or vegetables at least 2 times a week?	
	(a) Coconut	☐ [1=Yes; 2=No]
	(b) Groundnuts	☐ [1=Yes; 2=No]
	(c) Roasted Bengal gram	☐ [1=Yes; 2=No]
10.6	What type of milk do you regularly consume?	☐
	[1=Whole milk, 2=Skimmed Milk, 3=Toned milk, 4=Skimmed milk powder]	
10.7	Do you consume any vitamin or mineral supplement at least once a week? ☐ [1=Yes; 2=No]	
10.8	If Yes,	

	(a) **Brand name / Type**	(b) **Dosage(mg)**	(c) **No. / week**

10.9	Are you on any special diet?	☐ [1=Yes; 2=No]
10.10	If yes,	
	(a) Diabetic diet	☐ [1=Yes; 2=No]
	(b) Low fat diet	☐ [1=Yes; 2=No]
	(c) High fiber diet	☐ [1=Yes; 2=No]
	(d) Low salt diet	☐ [1=Yes; 2=No]
	(e) Weight reducing diet	☐ [1=Yes; 2=No]
	(f) Others	☐ [1=Yes; 2=No]
10.11	If others, please specify	_____
10.12	Since how many years are you on this special diet?	☐☐ [years]

INSTRUCTIONS FOR COMPLETION OF FFQ

The aim of the questionnaire is to obtain the average food intake of an individual over a one year period.

The questionnaire, after entry into a computer, will provide details of consumption of various nutrients – energy, carbohydrates, fat, proteins, vitamins and minerals. Entry of each food item correctly is essential as different foods provide different nutrients. Please use the portion size provided as they guide the subject in reporting the quantity he / she consumes.

COMPONENTS OF THE QUESTIONNAIRE:

The questionnaire comprises two components:

1. A food list of 184 food items
2. A set of open-ended questions.

FOOD LIST

The food items are grouped under the following headings to help the subject recall the foods better:

- Cereals
- Lentils/Dhals/Gravies
- Chutneys / salad/ papad
- Non-vegetarian
- Milk and Beverages
- Miscellaneous
- Snacks / sweets/ desserts
- Fruits
- Vegetables

OPEN-ENDED QUESTIONS:

This comprises a set of questions aimed at eliciting further information on the food pattern of an individual. Information on the type of oil used the method of cooking of food, type of milk used, usage of vitamins and mineral tablets/capsules and any special diet adhered to are recorded in this section.

ADMINISTERING THE QUESTIONNAIRE:

Please familiarise yourself with the food frequency questionnaire before administering it.

INTERVIEWING THE SUBJECT:

Some of the food items may not be familiar in some centres. If the subject is not aware of the food item, please proceed to the next item in the list.

Please place the standard serving sizes e.g. katori etc. in front of the subject before you start the food frequency questionnaire. This will help the subject to estimate the food quantities that he/she is reporting.

PORTION SIZES:

Standard serving measure with volumes

Bowl = 220ml

Glass = 125 ml

Teaspoon = 5 ml

Tablespoon - 10 ml

Ladle = 56 ml

Inform the subject before beginning the questionnaire:

"We are doing this study at a national level and there may be several food items in the list that you may not have heard of but are eaten in other places .If we name an item you have not heard please answer'no'so that we proceed to the next question.

Then proceed to ask the questions and make entries in the method specified below to obtain and document information in the **food frequency** questionnaire:

1. *Ask the subject if they consume each of the food items listed in the questionnaire. For instance,* ***"Do you consume chapathis?"*** *If yes,*

2. *Ask the subject* ***"During the past one year, how often have you consumed this? Daily, weekly or monthly?"*** *…… If daily,*
3. *Ask* ***"On average how many times would you consume chapathis each day?"*** *If the answer is two times (twice), enter '2' under the "Per Day" column.*
   This provides the 'frequency of consumption' of the food item.
4. *Then ask, "****How many chapathis on average do you eat each time?" ….*** *If the answer is '3', enter '3' under the "Average consumption" column. This example is illustrated below:*

This is the 'average intake' of the food item.

CEREALS	**Portion size**	**(a) Average consumption**	**(b) Per Day**	**(c) Per Week**	**(d) Per Month**	**(e) Per Year / Never**
Chapathis/parathas/naan	No	3	2			

5. **If there are any foods that a subject does not consume, enter, '0' under the "average consumption" column and '0' in the "Per Year/ Never" column (two entries).**

For example if a person never eats Pizza's or Burgers, the entry would be as shown below:

CEREALS	**Portion size**	**(a) Average consumption**	**(b) Per Day**	**(c) Per Week**	**(d) Per Month**	**(e) Per Year / Never**
Pizza, Burger	No	0				0

PLEASE NOTE, THEREFORE, THAT *EVERY* LINE MUST HAVE AN ENTRY

6. When the subjects reports an average portion size as:
   2 to 3 chapathis
   Record as 2 ½ chapathis and NOT 2 - 3 or 2.5

If for example an individual reports that they have 2-3 chapathis twice a day, your entry will be:

CEREALS	**Portion size**	**(a) Average consumption**	**(b) Per Day**	**(c) Per Week**	**(d) Per Month**	**(e) Per Year / Never**
Chapathis	No	2½	2			

7. For Miscellaneous foods, ask the subject if they add these foods on the table.
   For instance,
   - Butter, jam, cheese added to bread or toast would come under this category as would tomato sauce added to food on the table
   - Ghee added to rice or other food at the table would come under this category. However, ghee added during preparation/cooking as for instance during the preparation of sweets would not come under this category.
   - For sugar, the amount of additional sugar added to a glass of tea/ coffee or milk at the table is considered. If the subject reports that no sugar is added enter '0'.
     a. *For this reason ask "Do you add additional sugar to tea and coffee. If the answer is YES,*
     b. *Ask "How much for each glass?" If the answer is "2 teaspoons"*
     c. *enter '2' under the "Average consumption" column,*
     d. *if a person has 1 glass of tea twice a day, and 1 glass of coffee twice a day, enter '4' for the total number of times sugar is added to beverages per day under the "Per day" column*. Enter this information as indicated below:
     e.

MISCELLANEOUS	**Portion size**	**(a) Average consumption**	**(b) Per Day**	**(c) Per Week**	**(d) Per Month**	**(e) Per Year / Never**
Sugar	Tsp	2	4			

8. For foods where multiple items are listed, ask the individual how often they consume all these foods
   *For example, "*Lime rice, puliogare, curd rice, tomato rice*".*
   If the subject reports that he eats one bowl of lime rice once a week and one bowl of tomato rice once a week
   record as '2' under the 'Per Week' column (i.e. both Lime rice and tomato rice together)

CEREALS	**Portion size**	**(a) Average consumption**	**(b) Per Day**	**(c) Per Week**	**(d) Per Month**	**(e) Per Year / Never**
Lime rice, puliogare, curd rice, tomato rice.	Bowl	1		2		

9. Use general items where ever specific foods are not mentioned. For instance, coconut biscuits, cream biscuits will be entered under "sweet biscuits". Similarly, groundnuts, cashew nuts and other type of nuts will be entered under "nuts".
10. If individuals consume a combination of preparations eg. paneer mutter masala OR mixed groundnut and coconut chutney, enter the food under that item which is in greater proportion.

11. For fruits and vegetables ask the subject if they consume that food only in season or year round. If seasonal put a cross for the item in the appropriate column.

For example if a person eats one banana a day throughout the year and 1 apple a day when apples are in season, your entry will be:

FRUIT	Portion size	(a)Average consumption	(b)Per Day	(c)Per Week	(d)Per Month	(e)Per Year / Never	(f) Seasonal (cross if seasonal)
Banana	No	1	1				
Apple	No	1	1				X

AVERAGE PORTION SIZES OF FOODS NOT LISTED IN THE QUESTIONNAIRE:

If individuals report consumption of foods below regularly, use the measure provided below.

1 big (hotel) idli = 1 ½ servings of medium size idli

1 set dosa = 1 ¼ servings of dosa

1 bhatura = 1 ½ servings of medium size poori

1 small ragi ball = ½ serving of a medium size ball

1 bun = 4 servings of bread slices

50 gms mixture/ namkeen = 3 servings of 1 tbsp mixture

1 bakery sweet / salt biscuit OR Cream Biscuit OR Cookie = 1 ½ serving of sweet/salt biscuits

1 small banana = ½ serving of medium banana

1 cup vegetables = 8 servings of vegetables in tablespoons

1 peg = 30 ml (made up to 1 glass with water or soda)

1 large peg = 45 ml (made up to 1 glass with water or soda) = 1 ½ 30 ml peg

FOOD LIST DESCRIPTIONS:

All the food items listed in the food list in the FFQ have been described in the following section, so that the interviewers understand the foods items listed. All food items have been listed and described in the same order listed in the questionnaire.

CEREALS:

3.1 Tandoor roti, phulkas, wheat phulkas: Refers to those Indian breads made of wheat flour prepared on a tawa without oil.
3.2 Chapathis, parathas, naan: Refers to all types of Indian breads and parathas with added oil, prepared on a tawa.
3.3 Stuffed parathas, franky: Refers to all types of Indian breads and parathas stuffed with vegetables/meat/eggs and prepared on a tawa or baked.
3.4 Rice roti: Indian rotis made with rice flour.
3.5 Ragi roti: Indian rotis made with ragi flour.
3.6 Bajra, maize (makkai) roti: Indian rotis made with bajra/maize flour.
3.7 Jowar roti: Indian rotis made with jowar flour
3.8 Channa roti: Indian rotis made with bengal gram/channa/ besan flour.
3.9 Poori, bhatura: Refers to Indian breads fried in oil.
3.10 Plain rice: Cooked raw/parboiled rice.
3.11 Vegetable pulao/ veg biriyani: Includes all fried rice with vegetables
3.12 Mutton, chicken pulao/ biriyani: Includes all non-vegetarian fried rice.
3.13 Lime rice, puliogare, curd rice , tomato rice : refers to rice based preparations that are seasoned and/or flavored in oil. Included are foods such as vangi bath, curd rice, tamarind rice, tomato rice, coconut rice etc.
3.14 Bhagar : Recipe containing rice cooked with potato and tomato.
3.15 Bisibelebhath: Contains rice and tur dhal (in more or less equal proportions) cooked with tamarind and combination of different vegetables.
3.16 Khichdi, khichri: Prepared with rice/broken wheat with green gram dhal and sometimes vegetables, garnished with seasonings.
3.17 Pongal: Prepared with raw rice and green gram dhal garnished with pepper, jeera and other spices and condiments.
3.18 Upma: Prepared with rava (sooji)/vermicelli/rice cooked with seasonings with or without vegetables.
3.19 Plain ragi ball: Staple food item prepared with cooked ragi flour.
3.20 Ragi ball with rice: Staple food item prepared with cooked ragi flour and raw rice.
3.21 Idlis: Steamed preparation made with batter of rice/ vermicelli/rava and black gram (urad) dhal.
3.22 Plain dosa, uthappam: Indian pancake made with the batter of rice/rava/wheat flour/rice flour with or without dhal (mainly black gram dhal). Includes rava dosa, set dosa etc.
3.23 Masala dosa: Dosa with a filling of vegetables.
3.24 Pesarattu: Indian pancakes made on tawa with a batter of green gram (moong) dhal and spices.
3.25 Poha, Laia: Prepared with beaten rice flakes with or without vegetables and groundnut.
3.26 Avalakki, attakalu: Prepared with beaten rice seasoned with a little oil.

3.27 Dalia: Made with whole or broken wheat with green gram (moong) dhal with or without vegetables.
3.28 Rice, ragi porridge: Porridge (kanji) made with rice or ragi, without milk
3.29 Vada, all types: Batter of black gram dhal or any other dhal shaped into balls and fried in oil.
3.30 Corn flakes, cereal flakes etc: Includes cornflakes other cereal flakes and muesli (Kelloggs, Mohuns , Bagrys , Express Foods etc) consumed with milk.
3.31 Bread, Toast, Rolls, Buns: Refers to all types of breads, buns, rolls etc. plain, toasted, sandwiched, or grilled.
3.32 Pizza, Burger: Includes vegetarian and non-vegetarian pizzas (cut into pieces) and burgers.
3.33 Noodles, macaroni, pasta etc: Includes the ready-to-use (e.g. Top Ramen, Maggi, Pasta Treat etc) and prepared vegetarian and non-vegetarian noodles and macaroni and other pastas.

LENTILS / DHALS / GRAVIES

4.1 Plain tur dhal sambar / dhal: Refers to sambar or dhal prepared with red gram dhal (tur dhal) **without** any vegetables.
4.2 Tur dhal sambar / dhal with vegetables: Refers to sambar or dhal prepared with red gram dhal (tur dhal) **with** vegetables.
4.3 Other dhal sambar/dhals: Refers to sambar or dhal prepared with any other dhal (masoor, green gram, bengal/channa etc).
4.4 Channa, rajma, dry peas etc. curry: Refers to curry prepared with any whole gram/pulses.
4.5 Green leafy vegetable curry: Refers to any gravy preparation that includes any green leafy vegetable such as amaranth, palak, etc., with or without dhal.
4.6 Paneer gravy: Refers to any gravy preparation with paneer.
4.7 Rasam, all types: Refers to all types of rasam e.g. tamarind and tomato rasam.
4.8 Kadhi: Curry prepared with sour curds/buttermilk, with or without vegetables.
4.9 Besan: A preparation prepared with besan/bengal gram flour and tomato.
4.10 Mosaru huli: A preparation made with sour curds/buttermilk and coconut with or without vegetables.
4.11 Bassaaru, uppusaaru: Prepared by straining the cooked greens and dhal and adding seasoning.
4.12 Mixed vegetable sagu: A gravy preparation made with mixed vegetables.
4.13 Bengal gram sambar/curry: Sambar or curry prepared with bengal gram.
4.14 Blackgram dhal curry: Curry prepared with black gram dhal.

CHUTNEYS / SALAD / PAPAD

5.1 Soups, all types (veg or non-veg): Includes all forms of vegetarian and non-vegetarian soups with thickening added to it such as tomato soup, sweet corn soup etc.
5.2 Fresh vegetable salad: All types of fresh salad prepared with one or more vegetables (e.g. cucumber, carrots, lettuce, onions, tomato etc).
5.3 Hesarebele salad: Salad made with green gram dhal and cucumber.
5.4 Vegetable Raitha: Prepared with vegetables (e.g. onions, tomatoes, cucumber etc) and fresh curds.
5.5 Mango, lime pickle etc: Includes all types of pickles used.

5.6 Papad: Refers to papads fried in oil. Papads are thin crisp sun-dried disc shaped wafers of dhal or cereal flour.
5.7 Kachri: A groundnut sized papads fried in oil.
5.8 Sandige, vathal: Small sun-dried wafers, fried in oil.
5.9 Coconut chutney: Refers to chutneys prepared with mainly coconut.
5.10 Groundnut chutney: Refers to chutney prepared with mainly groundnut.
5.11 Tomato chutney: Refers to chutney prepared with mainly tomato.
5.12 Chilli chutney: Refers to chutney prepared with green/red chillies.
5.13 Tamarind chutney: Refers to chutney prepared with mainly tamarind.
5.14 Mango chutney: Refers to hot chutney prepared with ripe mango.
5.15 Brinjal, ridge gourd, other vegetable chutney: Chutneys prepared with any other vegetables.
5.16 Gogu chutney: Chutney made with gogu leaves.
5.17 Urad dhal chutney: Chutney prepared with black gram (urad) dhal.
5.18 Varhadi Thecha: Groundnut based preparation.
5.19 Chutney powder: Prepared as a dry powder with roasted dhals and spices.

NON – VEGETARIAN

6.1 Chicken curry: Refers to chicken prepared in gravy from.
6.2 Chicken fry/grilled: Chicken fried or grilled form.
6.3 Mutton/ pork/beef curry: Refers to all red meats in gravy form.
6.4 Mutton / beef/ pork fry: Refers to all red meats in fried or grilled form.
6.5 Fish curry: Refers to fish prepared in gravy from
6.6 Fish fry: Fish fried or grilled form
6.7 Organ meats (Liver, brain, kidney etc.): Refers to preparations containing these organs.
6.8 Prawn, crab, shell fish etc.: Preparations made with prawn, crab, shrimp or any shell fish.
6.9 Egg (boiled, poached, omelettes): Eggs prepared in any form – boiled, fried, poached, omelette, egg gravy, scrambled.
6.10 Mutton, chicken etc Kebabs: Includes all non-vegetarian kebabs.
6.11 Ham, salami, bacon etc.: Preparations using ham, salami or bacon.
6.12 Pigeon: Pigeon meat eaten in any form
6.13 Other poultry (lave, titar, bater etc): Preparations made with all other poultry apart from chicken and pigeon – e.g. quail, duck.
6.14 Rabbit: All preparations made with rabbit meat.

MILK & BEVERAGES

7.1 Tea: Refers to tea prepared with milk.
7.2 Coffee: Refers to coffee prepared with milk.
7.3 Plain milk: Refers to plain milk with sugar without any other additions.
7.4 Flavored milk (horlicks, bournvita etc): Refers to milk with additions/supplements such as bournvita, milo, cocoa, horlicks, badam milk, milk shake etc.
7.5 Curd, yoghurt: Fermented milk
7.6 Buttermilk/Lassi: Diluted beaten curds with or without seasonings.
7.7 Fresh fruit juice (lime, orange etc): Refers to any fresh fruit juice.
7.8 Fanta, pepsi, coca cola etc.: Refers to all aerated soft drinks available in bottles or cans.
7.9 Beer: Includes all forms of beer such as draught beer, etc.
7.10 Wine: Includes all forms of wine such as red wine, white wine, champagne etc.

7.11 Spirits (whiskey, gin, rum): Includes all other alcoholic beverages such as rum, whisky, vodka etc.

7.12 Local arrack/toddy: Refers toddy/arrack or any other locally available fermented alcohol taken from palm tree or any other source.

7.13 Aam ka panna: Juice prepared with raw mango.

MISCELLANEOUS

8.1 Butter/ cream: Refers to the addition of butter or cream to any foods while eating (e.g. bread with butter)

8.2 Ghee: Refers to the addition of ghee to any foods while eating. For e.g. ghee with rice, idly etc.

8.3 Jam: Includes all jams and marmalades (e.g. Kissan)

8.4 Sugar: Refers to additional sugar added to tea or coffee regularly.

8.5 Honey: Refers to honey on the table while eating.

8.6 Jaggery: Refers to jaggery taken while eating and additionally with coffee/tea.

8.7 Cheese: Refers to any cheese taken (Amul, Britannia etc.)

8.8 Ketchup, tomato sauce: Refers to any ketchup or tomato sauce used (e.g. Kissan, Maggi, Heinz etc)

SNACKS/ SWEETS/DESSERTS

9.1 Mixture, namkeen, chiwda, khara boondi, dalmoth: : Refers to all deep-fried salted snacks prepared from besan and cereal flour.

9.2 Nuts (grounduts, cashewnuts etc.): Includes all nuts such as groundnuts (moongphali, kadalekayi), badam, cashewnuts, pista, walnut (akrut) etc.

9.3 Chips, French fries: Includes all types of chips and French fries.

9.4 Samosa,bajji ,bonda, cutlet, patties: Includes all deep-fried items with potatoes and/or vegetables dipped in batter or filled in a dough.

9.5 Veg & non-veg puff: Includes all types of baked salted puffs.

9.6 Biscuits (salted): Refers to all forms of salted biscuits such as krackjack, monaco, bakery salt biscuits etc.

9.7 Biscuits (sweet, creamed, etc): Refers to all forms of sweet biscuits such glucose biscuits, marie, coconut, cookies, cream biscuits etc.

9.8 Bhel puri, masala puri, other chaats: Refers to all types of chaats like bhelpuri, pani puri, masala puri etc.

9.9 Murukku , chakli, sakinalu: Refers to deep fried savories prepared with any dhal and/or cereal flour made into a dough and fried in different shapes (usually rounds or circles)

9.10 Dhokla: Steamed snack prepared with besan or urad dhal (and rice flour).

9.11 Pav bhaji: A popular snack with pav (Indian bun) served with tomato based gravy.

9.12 Cakes or sweet pastries: Includes all cakes – plain or cream- and pastries like Black Forest etc.

9.13 Payasam, kheer: A sweet dish with cereal (sometimes with or without dhal) cooked in milk.

9.14 Custard, puddings: Refers to all custards (e.g. plain, caramel) and puddings (e.g. bread) and soufflés.

9.15 Ice cream: Refers to all ice creams

9.16 Jamoon, Jilebi, Jangir etc.: Refers to all fried sweet preparations dipped in sugar syrup.

9.17 Mysore pak, ladoo, barfis: Refers to all Indian besan and/or cereal based sweet preparations shaped into small squares/rectangles or round balls.

9.18 Indian milk sweet (peda, rasgulla etc): Refers to all Indian milk based sweet preparations such as peda, bengali sweets, khoa etc.
9.19 All Halwas: Refers to all halwas e.g. carrot, badam, fruit etc.
9.20 Puran poli, obattu/holige: Refers to a sweet preparation where dhal and jaggery / sugar are used as fillings into maida and/or wheat dough and shallow fried.
9.21 Shakarpara, balushahi, badusha: Fried cereal based sweet preparations.
9.22 Kesari bhath: A sweet preparation made with rava/sooji.
9.23 Kajjaya, karjikayi: Refers to sweets made with jaggery/sugar with pulses or cereal and deep fried .
9.24 Kadubu: A deep fried sweet with dhal and jaggery/sugar filling in maida/wheat dough.
9.25 Baksham, arisalu, poornalu: Sweets prepared using cereal and/or dhal flour.
9.26 Sweet pongal: A sweet dish prepared with raw rice, green gram dhal and jaggery and/or sugar.
9.27 Sonpapdi, kaju katli: Sweet preparation cut into squares/rectangles made with maida/besan or powdered nuts.
9.28 Gujiya: Deep fried sweet preparation with filling of khoya in maida dough.
9.29 Shirkurama: A sweet preparation made with vermicelli/sevai, milk and dry fruits.
9.30 Shrikand: Strained and flavored curds beaten with sugar.
9.31 Dairy milk, 5 star, kitkat etc: Includes all chocolates available in the market.

FRUITS

Names of some of the fruits in local languages:

1. Sweet lime : Musambi, Kittile hannu, Narangi
2. Guava: Amrood, Seebe, Peru, Jami pandu
3. Grapes: Angoor, draksha
4. Pineapple: Ananas
5. Pomegranate: Anar, Dalimbari, Danimma pandu
6. Watermelon: Tarbooj, Kallangadi, Puchakayi
7. Musk melon: Kharbooj
8. Jackfruit: Fanas, Halasu, Panasa
9. Custard apple: Seethaphal
10. Plums: Alubokhara, alapagoda
11. Zizyphus: Bor, Ber, Regu pandu
12. Pears: Nashpati, Berikai
13. Jamoon: Jambu fruit, Nerelai, Neredu pandu
14. Palmyra: Tar, Thati nungu, Thati pandu

VEGETABLES

Names in local languages and explanations of some of the vegetables:

1. Palak, methi, other leafy vegetables: Sag/ soppu. Includes all types of locally available green leafy vegetables.
2. Beetroot/ radish/ knol-khol: Includes beetroot, radish/turnip/mooli/shaljam, knol-khol
3. Beans, cluster beans: Includes French beans/semifalli, cluster beans/gowarfalli, broad beans/avarakkai
4. Ladies finger: Okra/ bhendi/ benda kayi/ bende kayi.

5. Bottlegourd(lauki),ashgourd,Ridgegourd(turai), snakegourds, etc.: Includes all gourds like bottle gourd/dudhi/sorekai/kaddu/ sorekayi, ashgourd/petha/budagumbala kayi, ridge gourd/turai/heeraikayi, beera kayi, snake gourd/padavala, bitter gourd/karela/hagal kayi/kakara kayi.
6. Drumstick: Mungana phalli.
7. Colacasia (arvi): Colacasia/arvi/samagadde/chama dumpa
8. Jackfruit tender: Jackfruit tender/fanas kawla. Reported in Lucknow.
9. Dhemsa: Locally available vegetable in rural Nagpur.
10. Kundru : Locally available vegetable reported from the northern regions.
11. Tinda: Locally available vegetable reported from Lucknow.
12. Lotus stem: Kamal gatta. Reported from Lucknow.
13. Chow chow marrow: Seema badana kayi/ chow-chow.
14. Yam: Suran/suvarna gadde/ duradakandagadda.

ENTRY OF RESPONSES FOR THE OPEN-ENDED QUESTIONS (QUESTIONS 12.1 to 12.12):

12.1. Record the average amount bought in a month for the whole family. Disregard oils used for other purposes (lighting lamps etc.). If consumption of secondary oil (butter, ghee etc) is less than 250 gm then record as follows:

E.g. 100 gm = 0.1

12.2. Any other oils **used in cooking**, apart from those listed should be mentioned here.

12.3. This question should be asked to only those subjects who consume meat. Answer '1' = yes, if the subject routinely removes fat and skin from meat before cooking and '2' = no, if not removed.

12.4. Only number of coconuts used for the family per month is to be entered.

12.5. Only if coconut, groundnuts or roasted bengal gram is used as a thickening agent, then enter '1' = yes. Other wise enter '2' = no.

12.6. Definition of the different milks available:

Whole Milk

***Whole milk* – Includes all fresh milk given by vendors and supplied by milk booths. Whole milk can be only cow's milk OR milk with a combination of cow's milk and buffalo milk OR buffalo milk. It also includes whole milk powders and long life milk available in the market.**

Products available:

Bangalore centre:

Nandini milk – Red sachet.
Nandini milk - Brown sachet (full cream milk-6-9% fat)
Heritage milk
Good Life (Nandini)
Vintage milk sachet
Nestle, Amul and Vijaya liquid whole milk and whole milk powder

Hyderabad centre:

Red packet government dairy milk
Heritage

Jersey
Nestle, Amul and Vijaya liquid whole milk and whole milk powder

Nagpur centre:
Dinshaw milk
Haldiram milk
Amul milk
Shaskiye milk

Lucknow centre:
Parag milk – orange packet
Nestle, Amul and Vijaya liquid whole milk and whole milk powder

Skimmed milk – Includes whole milk from which cream has been removed at home and the liquid skimmed milk available in the market.

Products available:

In all centres:
Nestle and Amul skimmed milk

Bangalore centre:
Vintage fat free milk sachet (fresh milk)
Nilgiris fat free milk sachet (fresh milk)

Hyderabad centre:
Blue packet government milk

Lucknow centre:
Janta milk (no fat)

Toned milk – Dried skim milk added to a high –fat milk such as buffalo milk ,to reduce the fat content but maintain the total solids.

Products available:

Bangalore centre:
Nandini milk (toned milk) –Blue sachet (3%- 8.5%fat)
Nilgiris milk (toned milk) 3.5% fat

Hyderabad:

Green packet government dairy milk

Nagpur:

Packet and bottle government dairy milk

Lucknow:

Parag - Green and red packets

Skim milk powder:

Products available in all centres:

Sagar non fat milk powder .
Anikspray
Milk man dairy whitener (Britannia)-18% fat
Milkana –19% fat
Amulya dairy whitener – 20 g fat

For Bangalore: Nandini skimmed milk powder (1%fat)

12.7. Vitamins and mineral tablets or capsules if taken should be documented. 1=yes and 2=no.
12.8. If yes is entered in the previous question, details of the tablet/capsule taken should be documented.
12.9. This question is for people who have consciously adopted a diet that is different from their normal household diets for health or personal reasons.
12.10. .If any special diets are taken, for example low fat diet, diabetic diet etc, then it should be documented as '1'=yes and '2' = no.
12.11. Any other diet apart from that listed in question12.10 is entered here.
12.12. The number of years the subject is on this type of diet is documented.

INSTRUCTIONS FOR COMPLETION OF PAQ

The physical activity questionnaire aims to assess the habitual physical activity of the individual, by ascertaining recall over the past 1 month (4 weeks).

PHYSICAL ACTIVITY QUESTIONNAIRE

Ask the subject, how many hours he spends working (Q1). This will be easy to ascertain if the person has regular working hours, as is the case with a factory worker on the shop floor. On the other hand executives may tend to work irregular hours and you may have to resort to asking them *"On average, how many hours do you work?"*. When you ask this question, subtract the time that they have for meal breaks. *Thus if a factory worker tells you that he works from 7am to 3pm with a 1 hour lunch break, the hours at work would be computed as 8-1=7 hours. This is because time spent on eating etc. is accounted for later in the questionnaire. E.g.*

	On an average, how many hours per day do you spend at work?	☐☐ . ☐ [In completed half hours]

Once you have determined how many hours they spend at work, ask them how many hours they spend in 'standing', 'sitting', 'walking' and 'on activities more strenuous than walking'. Please use prompt by listing the sample activities provided under these headings in the questionnaire. The distribution of time spent, will depend on the occupation of the individual. Executives for instance may spend a substantial amount of their time sitting. Manual workers in a factory may spend substantial times 'walking' or on activities more strenuous than walking. Please note that the sum of all times in Q2 should add up to the time indicated in Q1.

	Of the hours you spend at work, how many hours do you spend in(in completed hours):			
	(a) **Standing:** Activities such as talk, lab work, supervise, mild cleaning, cattle grazing done standing.	(b) **Sitting:** Activities such as typing, computer work, cleaning grains, driving, ironing, done sitting etc	(c) **Walking**: walking around, strolling	(d) **On activities more strenuous than walking**: Fetch water/ fuel, fooder. weeding, chop wood, ploughing, pounding rice, walking with a load.
	☐☐. ☐ [hours]	☐☐ . ☐ [hours]	☐☐.☐ [hours]	☐☐ . ☐ [hours]
1.4	**If you spend any time at work on activities more strenuous than walking, please list the most important ones in order of importance (maximum four):**			
	(a)			
	(b)			
	(c)			
	(d)			

Ask the person how many hours they sleep in a day (both day and night naps).

	On an average, how many hours do you sleep in a day?	☐☐.☐ [In completed half hours]

Ask the mode of transport the person uses to get to work, If he walks,

	How do you travel to and fro from work?	_____

The rest of the data on physical activity must be filled in the table provided. In order to help people recall their activities, we have divided the table into broad categories of physical activity. For each of the categories, please use the activities listed as prompts.

- First ask whether the subject undertakes any form of sport, games or exercise and list the activities provided in this category.
- Then ask how frequently they undertake each activity that they have reported and write the appropriate frequency code.
- Finally, ask "when you undertake _____, on average how much time do you spend in that activity on each occasion.

	Apart from work, how do you spend your time (over the last month): Frequency options: [1=Daily; 2=Once a week; 3=2-4 times/week; 4=5-6 times/week; 5=2-3 times/month; 6=Once a month]		
	Sports / games / exercise (for eg. walking, badminton, jogging, cricket……etc)		
	(a) Name of activity	(b) Duration	(c) Frequency
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐

Then move on to hobbies involving manual labour. We have found that relatively few people report activities in this category. However, for those that do, these activities may contribute significantly to overall physical activity.

	Hobbies involving manual labour (for eg. Carpentry, gardening ……etc.)		
	(a) Name of activity	(b) Duration	(c) Frequency
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐

	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐
	_____	☐☐☐ [mts]	☐

We now move on to household activities. We have found that women, even if they are working full-time, spend a substantial amount of work on household chores. Working men also spend time on household chores, though generally less than women. However, there are large variations in the time that people spend doing household work, and so it is very important that you do not approach this question with any bias. In rural subjects Include rural activities performed around the house / for the house such as collecting fodder, collecting fuel, collecting water, animal care, care of kitchen gardens under household activities

We now move on to sedentary activities outside of working hours. These include all activities like reading, watching T.V. etc. that involve a minimal amount of energy expenditure on the part of the subject

We have found that there are some activities that people tend not to recall unless we provide them with specific prompts. These are included in the section ‘Other activities’ and include activites that we perform every day, but that are so common place that we often take them for granted.

Standard instructions for administration of a 24 hour recall

- Start by asking what the subject had to eat and drink the previous day.
- Start with the earliest meal (early morning) and proceed with the other meals (breakfast, mid morning, lunch, tea, dinner, before bed)
- Only if the subject has difficulty with recalling foods, start with the last meal consumed (dinner) and go backwards(tea, lunch, midmorning etc)
- Prompt for foods/ snacks consumed particularly between meals.
- Prompt more on liquids, accompaniments, side dishes, fruits, salads, additions (such as sherbaths, addition of tomato sauce, ghee, papads etc) as subjects generally tend to forget reporting items not part of their daily meal.
- Document descriptive details of food items (For example do not document dhal with potato as dhal, fried chicken as chicken. Etc).
- Document food items as reported, if they are unfamiliar to the research assistant, obtain further descriptive details.
- Record details of food preparation where necessary (for example vegetables as being fried/ boiled/ gravy etc)
- Document if the subject consumes any nutrition supplements (Horlicks, Multivitamins etc)

Migration Study : 24 hour recall sheet (Urban)

Name / ID no: **Date:** **Day:**
Age: **Gender: M /F**

What did you eat or drink the whole of yesterday starting with what you had after waking in the morning till you went to bed. Include foods that you ate outside home.

Early Morning: Time:

- *What did you add to the drink/beverages & how many tsp of it? .Eg sugar, honey, supplement etc.*
- *Did you eat anything with your beverage such as biscuits, rusks etc.*

Breakfast: Time:

- *Did you add anything to your breakfast? E.g. Ghee / butter / curds, pickle etc.*
- *Did you eat or drink anything in-between your breakfast and lunch.*

Mid meal : Time:

- *What did you add to the drink/beverages & how many tsp of it? .Eg sugar, honey, supplement etc.*
- *Did you eat anything with your beverage such as biscuits, rusks etc.*

Lunch: Time:

- *Did you consume anything in addition to the above foods? Salad, pickles etc.*

Tea time:

- *Did you have anything to eat in the evening with your tea or after it?*

Dinner: time:

- *Did you have a sweet/ fruit at any time during the day?*
- *Did you have anything before you went to bed .tea / milk etc.*
- *Did you add salt at the table during any of the meals? (please document)*

Before Bed: time:

Migration Study : 24 hour recall sheet (Rural)

Name / ID no: **Date:** **Day:**
Age: **Gender: M /F**

- *What did you eat or drink the whole of yesterday. Start with what you ate or drank after waking in the morning till you went to sleep. Include foods eaten outside home.*

Early Morning: AverageTime:

- *What did you add to tea/coffee/milk, and how many tsp of it did you add..*

First meal: Time:

Second Meal:Time:

Third meal: time:

- *Do you recall eating or drinking anything between your meals.*
- *Do you recall eating or drinking anything in somebody's house or with somebody else.*

INSTRUCTIONS FOR OF RECIPE COLLECTION AND STANDARDIZATION

The details of the method of collection have been described below. Please follow the instructions carefully so that it is standardized across all centres and so that accurate calculations of nutrient content are possible.

How to collect standardized recipes:

1. Approach a group that represents the study population
2. Obtain recipes from groups who regularly consume these foods.

3. Request an individual from this group to prepare the recipe and document the ingredients and recipe as it is being prepared.
4. If this is not possible, obtain the basic ingredients and recipe and prepare the recipe and document. This should be done under the supervision of a nutritionist.

A food weighing scale is required for this process. Each item used should be weighed and entered.

How do I decide if the recipe is OK?

Check for face validity from other housewives or the nutritionists from your center. If several people report preparing the recipe in the same manner, the recipe is accepted.

If the recipe is not OK….

Obtain another recipe from the same housewife who rejected it. OR
If necessary make minor alterations to accept.

While converting the recipes from volume to weight …..

1. **Use weighing scales that measure a minimum of 1gm**.
2. Before weighing the food, ensure tarring of the scale to 0.
3. Weigh all the raw ingredients in the recipe.
4. Weigh vegetables/ fruits after the non-edible portions are removed.
5. Weigh and document every addition added particularly while the recipes are prepared.
6. Re-calculate the weight of ingredients if any leftovers remain
7. **Fried foods have to be weighed carefully.** The weight of the oil taken for frying must first be taken. After the food item is fried, the weight of the leftover oil (both in the frying pan and that which is drained) has to be recorded.
8. **Always weigh the total weight of the cooked food**.
9. **The total number of portion sizes obtained should also be recorded**.
10. After this, weigh according to the **specified portion size** listed in the food frequency questionnaire. **Obtain weight per portion and total cooked weight of the foods.**

(Remember to tare the scale to 0 to discount the weight of the bowl/glass etc while weighing the food).

Once this information has been collected, enter in the format provided as a word document. The ingredients used and the amount of these ingredients should also be entered in the excel sheet provided.

INSTRUCTIONS FOR RECIPE PREPARATION

FOR THE RESEARCH ASSISTANTS:

- From the food list, check if any person from the household of the sample population is willing to prepare any of the recipes.
- Choose willing and reliable subjects from the sample population and allot the recipes to be prepared by them.
- Allot a particular convenient day for the subject to prepare the recipe.
- Ensure that the ingredients for the item to be prepared are available.
- Ensure that only a small portion is prepared (for 4 to 5 people) so that it is easier to weigh the foods and saves your time.
- Ensure the accuracy of measurement of the weighing scale each time it is taken on field.
- Proceed to document the recipe on the allotted day.

Please instruct the subject to prepare the recipe using the checklist below to ensure that all of them follow the same procedure:

- ✓ Keep ready all the ingredients to be used.
- ✓ Each raw ingredient is to be measured on the weighing scale.
- ✓ For raw ingredients, keep a newspaper on the scale, tare the scale to "0" and then place each ingredient one at a time on the paper and note the reading and enter.
- ✓ Instruct the subject to start preparing the recipe.
- ✓ If there are any remaining raw ingredients after the recipe has been prepared, measure them and minus from the initial weight of the ingredient
- ✓ In addition, if extra raw ingredients are added during preparation of the recipe, note the amount used.
- ✓ Every ingredient, including spices, salt and sugar, used has to be recorded.
- ✓ For vegetables, weigh the vegetables after they have been cut and the non-edible portions have been removed.
- ✓ After the food item has been prepared, weigh the total amount of the cooked food and record.
- ✓ After this is done, weigh the food in the specified portion size (e.g. sambar/dhal in ladles and rice in bowl etc) and note the weight of the food item one portion size.
- ✓ Check the number of portion sizes of the cooked food obtained totally and record.
- ✓ **For fried items**: Ensure that the oil taken for frying is weighed accurately before frying in any convenient vessel (with the weighing scale adjusted to "0"). After all the items are fried, note carefully the weight of the left-over oil as well as the oil drained out in the vessel with the food items. For this the following procedure should be used:
    - To determine the quantity of leftover oil:

      a. Weight of frying pan = a
      b. Weight of frying pan with oil before frying food item= b

c. Weight of frying pan with oil after frying food item = c
d. Therefore weight of oil used for frying = (b-c) = A

- To determine weight of oil drained

a. Weight of vessel without fried food in it = x
b. Weight of vessel with fried items = y
c. Weight of vessel after removing fried items = z
d. Therefore weight of drained oil = (z-x) = B

- To determine the total amount of oil used for the recipe :

Total amount of oil used for frying = A – B

SAMPLE RECORD OF RECIPE

1. RECIPE NAME: SAMBAR

INGREDIENTS:

1. Toor Dhal-150g
2. Vegetables-400g (Ladies finger, drumstick, brinjal, cucumber, cluster beans, colocasia, potato, snake gourd, tomato, cut into 1 inch pieces)
3. Small onions-100 gm
4. Chilly powder-8g
5. Coriander powder-10g
6. Turmeric powder-2g
7. Asafoetida-1g
8. Fenugreek-2g
9. Coriander leaves-5g
10. Curry leaves-5g
11. Tamarind-10g
12. Mustard-1g
13. Oil- 9g
14. Salt – 8 gm

METHOD

1) Cook the dhal and mash.
2) Boil the vegetables and onions with salt.
3) Extract the pulp from tamarind and add this to the vegetables.
4) Add turmeric, cooked dhal and the coriander and chilli powder. Boil for a few minutes. Remove from fire.
5) Season the mustard in oil. Add fenugreek to the oil and when it starts spluttering, add curry leaves and coriander leaves. Add to sambar.

- Total cooked weight = 1170 gm
- Total number of portion sizes
  Bowl = 4 ½ bowls
- Weight per portion size:
  1 ladle= 68gm

2. RECIPE NAME: TOMATO CURRY

INGREDIENTS:

1. Tomato pieces-150g
2. Sliced small onions- 25g
3. Chilli powder- 5g
4. Coriander powder- 5g
5. Turmeric powder- 2g
6. Mustard- 3g
7. Fenugreek- 2g
8. Curry leaves- 1g
9. Oil- 5g
10. Salt-3g
11. Tamarind
12. Water- 5g

METHOD:

1) Add chilly powder, coriander powder and turmeric powder to tamarind water. Add 1cup water and salt and boil the mixture.
2) Add tomato and onion slices and allow to cook. When the gravy thickens, remove from the fire. Season the curry with mustard, fenugreek, and curry leaves.

- Total cooked weight 160 gm
- Total number of portion sizes:
  Tablespoon = 10 tbsp
- Weight per portion size :
  1 tablespoon = 16 gm

3. RECIPE NAME: MANGO PICKLE

INGREDIENTS:

1. Mango-200gm
2. Chilly powder-25gm
3. Asafoetida –7gm
4. Salt-15gm
5. Curry leaves-5gm
6. Gingelly oil-10gm

7. Mustard seeds-3gm

METHOD:

1) Cut the mangoes into small pieces. Mix the mango pieces with salt and keep it for a day.
2) Splutter the mustard seeds and curry leaves in oil. Add the chilly powder and sauté for sometime.
3) Add the mango pieces and asafoetida and mix well. Remove from fire.
4) Allow to cool and fill in airtight jars or bottles.

- Total cooked weight = 230gm
- Total number of portion sizes:
  Teaspoon = 23 tsp
- Weight per portion size: 1 tsp=10gm

4. RECIPE NAME: MURUKKU

INGREDIENTS:

1. Rice flour- 300g
2. Black gram flour - 100g
3. Dalda- 20g
4. Asafoetida powder- 5g
5. White gingelly seeds- 10g
6. Cumin seeds- 7g
7. Oil for frying- consumption 130 gm
8. Salt –5 gm

METHOD:

Mix rice flour and gram powder and sieve. Add asafoetida powder, cumin seeds and gingelly seeds and mix. Pour hot dalda into it. Mix well with fingers, add a little water and knead into soft dough.. Shape the dough into rounds on a wet piece of cloth. Remove and fry in oil. Fry till golden brown and remove.

- Total cooked weight= 660 gm
- Total number of portion sizes:
  Number = 22
- Weight per portion size:
  1 Number = 30gm
- Total weight of oil taken = 500 gm
- Weight of leftover oil in frying pan = 380 gm
- Weight of drained oil = 10 gms

RECIPE RECORD

CENTRE:

INTERVIEWER CODE: ----------

1. RECIPE NAME:

INGREDIENTS:

1. ----------
2. ----------
3. ----------
4. ----------
5. ----------
6. ----------
7. ----------
8. ----------

METHOD:

1) ----------
2) ----------
3) ----------
4) ----------
5) ----------
6) ----------
7) ----------
8) ----------

- **Total cooked weight = ----------**
- **Total number of portion sizes obtained (enter where applicable):**

  Bowls = ----------

  Ladles =----------

  Tablespoons =----------

  Teaspoons = ----------

  Glass = ----------

  Number =----------

- **Weight per portion size (enter where applicable):**

  1 Bowl = ----------

  1 Ladle =----------

  1 Tablespoon =----------

  1 Teaspoon = ----------

  1 Glass = ----------

  1 Number =----------

For fried items:

Total weight of oil taken =----------

Weight of leftover oil =----------

Weight of frying pan = ----------

Weight of frying pan with oil before frying food item (a) = ----------

Weight of frying pan with oil after frying food item (b) = ----------

Therefore weight of oil used for frying (a – b) = ---------- (A)

Weight of vessel without fried food in it (x) = ----------

Weight of vessel with fried items (y) = ----------

Weight of vessel after removing fried items (z) = ----------

Therefore weight of drained oil (z – x) = ---------- (B)

Therefore, total amount of oil used for frying (A-B) = ----------

Anthropometry protocol
The methodology for anthropometrical assessments was adapted from standard reference texts on the subject.

General principles
A digital weighing machine with an accuracy of 100 gms will be used to measure weight. Height will be measured by a portable plastic stadiometer with a base plate, accurate to 1 mm (Leicester height measure; Chasmors Ltd, Camden, London, UK). For sitting height, a standard table (of known height) high enough for the legs of the participant to dangle over the edge when seated will be used. A skinfold caliper accurate to 0.2 mm (Holtain skinfold caliper; supplied by Chasmors Ltd, Camden, London, UK) will be used to measure the thickness of the skinfolds. Lengths and circumferences will be measured with a non-stretch metallic tape with a narrow blade and a blank lead-in (Chasmors metallic tape; Chasmors Ltd, Camden, London, UK).

The measurements (where relevant) will be made on the left side. If for some reason this is not possible, measurements should be taken on the opposite side and this change recorded. Measurements should be conducted in normal indoor clothing (basic clothes minus shoes, sweaters, socks, etc). Weight will be recorded to the nearest 100 gm. Heights, lengths, and circumferences will be recorded to the last completed millimetre. Skinfolds should be recorded to the last completed 2 mm. Weight and height will be recorded once, circumferences twice and skinfolds readings will be taken three times.

Notes:
(a) Extreme care should be taken to avoid digit preference when taking the recordings
(b) Any problems at the time of measurement that can affect their accuracy (such as those due to physical deformities, postural problems or bandages on the limbs) are recorded. However, in many cases the problem may be partially rectifiable e.g. removal of bandage in case of one. A common problem is that of hunching in case of older subjects. If so, check if maximum of the back is in contact with the wall. As the inadequate measurements cannot be used, it is strongly advisable to try and address the problem rather than record inadequate measurements.

Weight
The weighing machine should be placed on the most level part of the floor and calibrated at the start of every clinic. At the time of each reading, the scale should be turned again to ensure that the monitor reads 'zero'. The participant should be asked to stand on the scale reasonably straight and looking ahead. Weight should be recorded only when the reading on the monitor had settled. Avoid taking the reading as the participant is coming off the weighing machine.

Height and sitting height

The stadiometer should be set up on the most level part of the floor and calibrated at the start of every clinic. The participant should be asked to stand on the stadiometer, while the observer checks the following points: (a) feet flat on the centre of the base plate, ankles together, heels resting on the bar at the back, and the inner borders of the feet at an angle of 60 degrees; (b) back as straight as possible, preferably against the rod but not leaning on it; (c) arms resting by sides, not behind or in front; and (d) head in the Frankfort plane (eyes looking straight ahead such that the lower edge of orbit was in line with external auditory meatus i.e. ear hole). The participant should be instructed to keep his/her eyes focused on a point straight ahead and to breathe easily. The headrest should be lowered while checking at the same time that the participant does not stand on tiptoe. The observer should be level with the scale at the time of reading to avoid errors due to parallax. To ensure this, the observer may have to stand on a stool or a thick book.

The table should be set up on a firm flat surface ensuring that it is stable and horizontal. The participant should be asked to sit on the table, and the measurement of height repeated using the same procedure as described for height above: head in the Frankfort plane, the back straight, and the thighs horizontal so that the hollow of the knee is approximately 1 cm clear of the table. The participant should be sitting on the table with the legs hanging unsupported over the edge, hands resting on the thighs with the buttocks and shoulders relaxed. The participant should be asked to sit up tall and headpiece slid down until it touches the head.

Waist circumference

The participant should be asked to stand straight with feet close together and abdomen relaxed, weight evenly balanced on both feet, and the arms hanging loosely at the sides. The measurement should be carried out on the bare skin. The observer should face the participant and place the tape around the participant, in a horizontal plane, at the level of the natural waist, which is the narrowest part of the abdomen between the ribs and the iliac crest (top of the hip bone) , as seen from the anterior aspect. With the participant breathing out gently looking straight ahead, the reading should be taken at the end of a normal expiration.

General notes for measuring circumferences:

Circumferences should be recorded with the zero end of the tape held in the left hand above the remaining part of the tape held by the right hand. The plane of the tape should be perpendicular to the long axis of that part of the body, and parallel to the floor. For all circumference measurements, the tape should not be pulled too loose or too tight, held snugly around the body part but not indenting it. In some individuals there may be gaps between the tape measure and the skin, in such cases attempting to reduce the gap by increasing the tension of the tape is not recommended.

Hip (buttock) circumference

The measurement is carried out with the participant wearing normal indoor clothing. The tape measure is applied to the widest part of the buttock. This is ensured by the observer squatting at the side of the participant so that the level of the maximum extension of the buttocks can be seen. Attention should be paid that the hip muscles of the participant are not contracted, and the tape is horizontal and not compressing the skin.

Mid-arm circumference

The participant should stand with his/her back to the observer with the arm flexed at 90 degrees. The tip of the acromion (the point of the shoulder) is palpated and marked. Then with the participant's arm flexed at 90 degree, the olecranon (tip of the elbow) is palpated. The tape measure should be put on the mark on the shoulder and dropped down to the tip of the elbow by the side of the arm. The exact distance is read as if an imaginary horizontal line had been drawn from the bottom most point of the elbow to the tape measure, and a point halfway between the acromion and the olecranon marked. One way of doing this to measure the length as above and then fold the tape on to itself to identify the mid-point. The participant is then asked to relax, with the arm hanging by the side. The tape is placed around the upper arm such that its upper border was at the level of the marking. The tape should be horizontal all round, resting firmly on the skin but not indenting it.

Calf circumference

The calf circumference is measured with the participant standing, evenly balanced, with the feet shoulder width apart. The measurement should be taken on bare skin. The tape is positioned horizontally around the calf and moved up and down to locate the maximum circumference in a plane perpendicular to the long axis the calf. The observer should bend down at the time of the reading to avoid errors due to parallax. The level at which the measurement is taken should be marked at the medial aspect of the calf (inner border).

Triceps skinfold thickness

The triceps skinfold is measured in the midline of the posterior aspect of the arm, over the triceps muscle, at a point midway between the lateral projection of the acromion process of the scapula and the inferior margin of the olecranon process of the ulna (identified as for the mid-arm circumference). A cross is marked with a vertical line drawn on the most dorsal part of the arm determined by 'eyeballing' the midpoint (the part that sticks out furthest posteriorly), and the horizontal line the same as that drawn for the mid-arm circumference. The skinfold is measured with the participant standing and the arm hanging loosely and comfortably at the side. With the caliper held in the right hand, the observer stands behind the subject and places the palm of his/her left hand on the subject's arm proximal to the marked level, with the thumb and index finger directed inferiorly. The triceps skinfold is picked up with the left thumb and the index finger, approximately 1 cm proximal to the marked level, and the tips of the callipers are applied to the skinfold at the marked level. The readings should be taken 5 seconds after the application of the calipers jaws.

General notes for measuring skinfolds: The sites should be marked before taking these readings. Palpation of the site prior to measurements helps familiarise the participant with contact in the area. The calipers should be held in the right hand, while the thumb and the index finger of the left hand are used to elevate a double fold of skin and subcutaneous adipose tissue about 1 cm proximal to the site at which the skinfold will be measured. Place the thumb and the index finger on the skin about 3 inches apart on a line perpendicular to the long axis of the skinfold, and gently pull the skinfold away from the

body by drawing the thumb and index finder towards each other. The fold needs to be grasped firmly, and the amount of tissue must be sufficient to form a fold with approximately parallel sides. Care must be taken so that only skin and adipose tissue are elevated (but not the muscle). The caliper head should perpendicular to the skinfold (with the dial facing), placed halfway between the crest and base of the fold. Gently and fully release the caliper pressure (the release of the pressure should be gradual to avoid discomfort). The pinch should be maintained for 5 seconds before taking the measurement. It is important to keep this timing accurate as otherwise the reading will vary. Errors due to parallax should be avoided by correct positioning over the dial (this may involve standing on something to be at the right height).

Subscapular skinfold thickness

The lowermost tip of the scapula is identified. If it is difficult to appreciate this, the participant should be asked to place the back of his/her hand on the lumbar region. The medial border of the scapula is followed downwards until the inferior angle is felt. Once it is identified, the participant was asked to relax with arms hanging by the side before a mark is applied to the skin immediately below the lower most tip (angle) of the scapula. The skinfold is picked up obliquely above the mark with the fold slightly inclined downward and laterally (at about 45 degree to horizontal), in the natural cleavage of the skin. The caliper jaws are applied below the fingers, such that the marked cross is at the apex of the fold. Readings should be taken after 5 seconds.

Calf medial skinfold thickness

The participant stands with the foot of the side being measured on a platform, so that the knee and hip are flexed to about 90 degrees. The skinfold is measured at the level of the maximum calf circumference, already marked as before. From a position in front of the participant, the observer raises a skinfold parallel to the long axis of the calf on its medial aspect, when viewed from the front, at a level slightly proximal to the marked site. The caliper head should be perpendicular to the skinfold with the dial facing up at the marked point on the medial border of the calf.

Blood pressure measurement

Blood pressure (BP) will be measured with OMRON M5-I (Omron, Matsusaka Co., Japan). This instrument meets the AAMI and International Protocol accuracy criteria. Three sized cuffs are available: (a) small cuffs (arm circumference 15-22 cm), (b) normal cuff (arm circumference 22-32 cm); and extra large cuff (arm circumference 32-42 cm). A digital thermometer (model name, company, country) will be used to measure room temperature. BP will be measured in right upper arm in sitting position.

Note: All those expected to be involved in the BP measurements should go through the instruction manual beforehand to familiarise themselves with the issues, possible problems and care of the equipment.

Steps in blood measurement

1) Check the subject has not undertaken following activities for at least 30 minutes preceding the examination: strenuous exercise, eating, drinking of anything other than water, smoking or drugs that affect the BP. Ask the subject to sit on the chair with right arm on the table. *Important:* Upper arm (cuff when applied) should be at the level of the heart, neither too high nor low. If required use a pillow or some other support to ensure this.
2) Apply the correct size cuff. This should be determined by the arm circumference (see above), which should be read from the anthropometry section. You should also keep a measuring tape handy to check in case the subject has not been to the anthropometry section (in case you do measure the arm circumference for assessment of the cuff size, avoid the temptation to note it in the anthropometry datasheet at this stage). The green coloured band (indicating the centre of the bladder) should be positioned 1-2 cm above the elbow joint on the inside of the arm. Close the cuff with the fabric fastener. The green area of the cuff must cover the brachial artery. The cuff should not be too tight or too loose; it should fit snugly so that it is just possible to fit two fingers between the arm and the cuff. Do not place the cuff on thick clothes or roll up the sleeve if it is too tight. *Important:* The sleeve of the dress should not constrict the blood flow in the arm. If so (either because of tight fitting shirt/blouse or rolling up of tight sleeve), take steps to address this (e.g. asking the subject to take off shirt over that arm or in case of female subject provide them with a loose gown to change into).
3) After the cuff is applied, wait for five minutes before taking the first reading. The subject should be made to relax during this time by making them sit comfortably, asking them to breathe easily and to relax the body and arm, and explaining the procedure. Stress that they should not move, talk or touch the device during measurement This period should also be used to note down information in the datasheet: researcher code and initials, BP apparatus number, cuff size used, and arm side on which the measurement is being made. *Important:* The BP apparatus will give accurate readings at temperature range of 10 – 40 degree Celsius. If room temperature is outside this range, take steps to address this (use room heater if too cold or cooler (or table fan with cloth soaked in water if cooler not available) if too warm.

4) Press the START button on the machine. Wait for the machine to complete the measurement. This is confirmed by the flashing of a single downward arrow symbol. When all the air has been released the 'heart' symbol on the display panel and the readings are displayed for the next five minutes. Note down the systolic and diastolic blood pressure and the pulse rate. *Important:* If the subject moves or talks during the measurement or the measurements appear inaccurate or the symbol 'E' (indicating error) is displayed on the screen, repeat the measurement.
5) Wait for 2-3 minutes before taking the second reading so that blood circulation can resume. This can be ensured by presence of 'heart' symbol on display panel. If you need to interrupt a measurement for any reason, you can do so by pressing the ON/OFF button. Record the second set of readings on the datasheet. Note down any problems (such as subject appearing too anxious despite reassurance or if the readings had to be taken on the left arm for some reason). Switch off after measurement to conserve batteries. The monitor will also switch off automatically after five minutes.

PROTOCOL FOR SAMPLE COLLECTION AND ANALYSIS

Contents

1. Preparation

1.1 Preparation of Subjects:

- Inform your subject at least two days before about sample collection.
- To come after 10-12 hours of fasting.
- Inform the 'Place' and 'Venue' of sample collection

1.2 Kit contents to be checked and kept ready prior to sampling:

- Vacutainers: 1 Red capped, 1 Grey capped and 2 Purple capped.
- Accessories: Tourniquet, Needle, Holder, Swab.
- Pasteur pipette
- Storage vials

1.3 Items not provided in the kit but required for sampling

- Centrifuge machine
- Test-tube stand
- Gloves
- Needle destroyer & bio-waste disposal packets

1.4 Preparation for transportation and Storage

- Ice-bucket
- Ice-packs (Keep overnight in deep freezer or in the ice compartment of the normal refrigerator)

1.5 Assign one kit for a single person: **Do not interchange vacutainers/ storage vials from two different sets as these are labeled.**

1.6 Enter the Lab id no., Name, Age, Sex and Date in a logbook.

2. Protocol for blood collection

- Take blood from the subject at recumbent position. Make the subject sit for 10 min. before starting sample collection.
- Keep ready one holder, one needle, one red-capped vacutainer, one grey-capped vacutainer and one purple-capped vacutainer.
- Attach needle to the holder.
- After applying the tourniquet insert the needle into the vein. **(Avoid application of tourniquet for more than one minute)**
- Insert red-capped vacutainer. Collect blood up to the capacity.
- Take out the red-capped vacutainer and insert grey-capped vacutainer. Ensure that the tube is filled to the mark.

- Take out the grey-capped vacutainer and insert purple-capped vacutainer (tube 1). Ensure that the tube is filled to the mark. Repeat the same with another purple –capped vacutainer (tube 2)
- Mix grey-capped vacutainer (containing fluoride) by inversion for 7-8 times (Do not shake vigorously) and keep them in ice- bucket (at 4 degree temperature).
- Allow the blood in red-capped vacutainer (Plain tube) to stand for 30 min at room temperature and allow blood to clot. Centrifuge the tube at 2500 rpm for 15 min.
- Blood Group typing and Hemoglobin estimations to be performed simultaneously with fresh blood from EDTA vacutainer.

It is important that serum is separated as soon as possible and at no cost later than 45 minutes after blood collection.

- Aspirate the serum using the given plastic pipette into three labeled storage vials provided (Vials are labeled as 'S' for serum)
- Centrifuge the grey-capped vacutainers for 15 minutes at 2500 rpm. Aspirate the plasma and transfer into three labeled vials provided in the kit (Vials are labeled as 'P' for Plasma)
- **Ensure that the storage vials are closed tightly.**
- **Store the packed cells of grey-capped vacutainer into deep-freezer at the center.**
- Centrifuge the two purple-capped vacutainers. Transfer EDTA-plasma into two storage vials labeled 'EP'.
- **Store the packed cells of one purple-capped vacutainer (tube 1) into deep-freezer at the center.**
- **Store packed cells in another purple-capped vacutainer (tube 2) in deep-freezer to be sent to the coordinating lab.**
- The storage vials (all 'S', 'P'and 'EP') are then transported in ice bucket to the medical college.
- Transfer two labeled 'S', two labeled 'P'and two labeled 'EP' vials to –20 degree centigrade deep freezer immediately. (To be sent to the coordinating lab)
- One vials each of 'P' & 'S' should be used by the Medical College for glucose and lipid estimation respectively.
- Estimate glucose without much delay in plasma (P).
- Estimate lipid in serum (S) sample**.**
- **Needle should be destroyed by needle destroyer and vacutainers collected as bio-waste material should be sent to incinerator.**
- In the last week of every month the Two labeled 'S', Two labeled 'P' and Two labeled 'EP' vials and one Purple-capped tube with the cells should be dispatched to the coordinating lab in dry-ice by Courier.
- Fill the **'Details of sample'** sheet (Annexure I) provided for each sample and sent to the coordinating lab along with the samples.
- **Ensure that the samples do not reach the coordinating lab on Saturdays / Sundays / Holidays. Preferably dispatch samples on Monday.**

- Inform coordinating lab before dispatching the samples. Send the details of dispatch to the coordinating Lab through e-mail.
- The address of dispatch is given in Annexure II

3. *Establishing inter and intra assay CV's*

(Every lab should establish inter and intra assay CV before starting the study. Communicate the results to coordinating center)

Intra assay

Analyze lipid controls and human assayed serum in replicates of 5 each in a single batch to establish intra assay CV. Take mean and SD of 5 values for each control. Calculate CV. It should not exceed 2 %.

Inter assay

Analyze lipid controls and human assayed serum in 5 different batches/ or five different days to establish inter assay CV. Take mean and SD of 5 values obtained on 5 different days for each control. Calculate CV. It should not exceed 3 %.

4. Protocol for pipette calibration

If the tests are performed manually ensure that pipettes are calibrated every 15 days.

For 1 ml pipette

Weigh accurately 1000 ul/1 ml of distilled water in an analytical balance. It should weigh 1 gm. If the weight is more or less reset the pipette or call the engineer.

For 10 ul pipette

Weigh accurately 10 ul of distilled water. It should weigh 10 mg in an analytical balance. If the weight is more or less reset the pipette or call the engineer.

5. Methodology for quality control

5.1 Reconstitution of lipid control levels and human assay serum

- Pat the rubber stopper from all sides and carefully open the bottle preventing any loss of dry material.

- Do not touch the inner part of the stopper with hands.
- Add the required amount of diluent and mix by gently rolling the vial.
- Wait for 20 min.
- Dispense 100 ul aliquot into eppendorf tubes and freeze (-20 degree).
- At the time of estimation take out one aliquot i.e. one eppendorf tube and thaw. Bring to room temperature (wait for 30 min) then proceed.

5.2 Internal Quality Control and levey jenning plot

- At least two lipid controls should be run with every batch of sample.
- Only when the results for qc is within the specified range, batch analysis of sample should be done.
- Record each and every observation on regular basis along with other details even if the results are wrong.
- Prepare a levey jenning plot with date on x-axis and values on y-axis.
- E-mail the plot to the coordinating lab for review.

5.3 Identification of errors from levey jenning plot

- Mean +/- 1SD or, Mean +/- 2SD : Result acceptable
- One point outside Mean +/- 2SD : By chance
- Two consecutive points Mean +2SD or, Mean –2SD : Unstable reagent, Unstable calibration material
- 4 consecutive points on the same side of the Mean +/- 1SD : Lack of reproducibility in pipetting sample
- Point outside Mean +/-3SD : Requires fresh calibration

5.4 External quality control

- The coordinating lab would send one sample for lipids and one sample for glucose estimation once in 15 days to all the centers.
- The lyophilized sample should be reconstituted with 1 ml of distilled water.
- Allow the reconstituted sample to stand for 30 min and mix gently by swirling.
- Analysis should be performed on the day of reconstitution.
- The analysis should be performed and results should be communicated with in a week’s time to the coordinating center.
- Results should be filled up in the format given (Annexure III).
- The report would be communicated in a week’s time.

6. **Methodology for analysis**

IMPORTANT: Please ensure that all the kits including lipid controls and human assayed serum have inserts giving details of how the analysis or reconstitution is to be performed. Please report to the coordinating center if the same is missing.

The methodologies are as per the kit inserts/manual provided with the kit. Please go through the kit inserts carefully.

Important points to remember

- **Record the date of reconstitution of standards/kits/controls.**
- **Bring all reagents, standards, and quality controls to room temperature before performing the assays.**

6.1 Glucose Estimation

Principle: Enzymatic oxidation of glucose in presence of glucose oxidase.
Steps:

1. Blank/ Standard/ Sample 10 ul
2. Reagent 1000 ul
3. Mix, Incubate for 25 min. at room temp. (20-25 degree C) or 10 min. at 37 degree C.
4. Read Absorbance at 500 nm.

Calculations: Absorbance Sample/ Absorbance Standard x 100 = _____ mg/dl
Normal range: 75-115 mg/dl
Linearity: upto 400 mg/dl

6.2 Triglycerides Estimation

Principle: By Enzymatic hydrolysis by lipases.
Steps:

1. Blank/ Standard/ Sample 10 ul
2. Reagent 1000 ul
3. Mix, Incubate for 10 min.at room temp.(20-25 degree C) or 5 min.at 37 degree C.
4. Read Absorbance at 500 nm.

Calculations: A Sample/ A Standard x 200 = _____ mg/dl

Normal range: 150-200 mg/dl
Linearity: upto 1000 mg/dl

6.3 Cholesterol Estimation

Principle: Cholesterol is determined by enzymatic hydrolysis and oxidation.
Steps:

1. Blank/ Standard/ Sample 10 ul
2. Reagent 1000 ul
3. Mix, Incubate for 10 min.at room temp.(20-25 degree C) or 5 min.at 37 degree C.
4. Read Absorbance (A) at 500 nm.

Calculations: A Sample/ A Standard x conc. of standard = _____ mg/dl
Normal range: 200-239 mg/dl
Linearity: upto 750 mg/dl

6.4 HDL-cholesterol Estimation

Principle: LDL, VLDL and Chylomicron fractions are precipitated quantitatively by addition of phosphotungstic acid in presence of Magnesium ions. After centrifugation HDL-C in the supernatant is determined.
Steps:

5. Blank/ Sample 200 ul
6. Reagent 500 ul
7. Mix, Incubate for 10 min. at room temp. (20-25 degree C).
8. Centrifuge, 10 min. at 4000 rpm.
9. Supernatant 100 ul
10. Cholesterol reagent 1000 ul
5. Mix, Incubate for 10 min. at room temp. (20-25 degree C) or 5 min. at 37 degree C.
11. Read Absorbance (A) at 500 nm or 540 nm.

Calculations: Multiply absorbance value with the factor 210 if absorbance taken at 500nm or multiply with 320 if absorbance taken at 540 nm.
Normal range: 30-50 mg/dl

6.5 Blood group Typing

Principle: Based on the principle of agglutination. Normal human RBCs possessing antigens will clump together in the presence of antibody directed towards the antibodies on the erythrocytes.
Steps:

- Blood / 10% cell suspension in saline on slide or tile 3 separate drops
- Anti A / Anti B / Anti AB 1 drop each
- Mix with applicator sticks
- Tilt slide back and forth and observe for agglutination.
- Tests that show no agglutination within 2 min. are negative.
- Do not interpret peripheral drying or fibrin stands as agglutination..

Interpretation of results:

Reaction with Anti-A	Anti-B	Anti-AB	Resulting Blood Group
-ve	-ve	-ve	O
+ve	-ve	+ve	A
-ve	+ve	+ve	B
+ve	+ve	+ve	AB

Limitations:

- All results must be interpreted within 2 min.
- Test at room temp.
- Certain weak groups of A and B may produce weak reactions anti-AB serum.

6.6 Hemoglobin Estimation

Principle: Hb reacts with Drabkins reagent, which contains Potassium Ferricyanide, Potassium Cyanide & Sodium Bicarbonate. Hb in blood is converted to Methmoglobin by Ferricyanide. Methmoglobin then reacts with cyanide to form Cyanmethmoglobin. Absorbance is proportional to Hb content

Steps:

1) Blood/Calibrator 20 ul
2) Drabkins reagent 5 ml
3) Mix ,Read at 540 nm

Calculation: A sample/ A calibrator x Conc. Of calibrator x 0.251 = ….gm/dl

Normal range: 13-18 gm/dl (Males)
11-16 gm/dl (Females)

7. When using auto analyzer: Points to remember

- Washing of accessories to be done on regular basis and should be given top priority.
- Serum in sample cups or any other accessory should not be left to dry after use. Should be dipped in plain water to be washed later.
- Sample aliquot into the sample cups should not be left open for long period of time. It causes evaporation and alteration in results.

8. When doing manually: Points to remember

- Calibrate your pipette every 15 days
- The spectrophotometer in use should be calibrated.
- The spectrophotometer should have a stable and continuous power supply.

Annexure II

Address for dispatch:

Dr. R. Lakshmy
Assoc. Professor
Room no. 53
Centralized Lab
CN Center, AIIMS,
New Delhi-110029

E-mail: lakshmy_ram@yahoo.com
g_ruby2123@yahoo.co.in
Phone (O) 011-26594426
(M) 9811458621
Fax 011-26167397 Attention: Dr. R. Lakshmy/ Dr. Ruby

Annexure I

Details of Samples

(To be filled for each sample)

Study ID code.:

Lab ID no.:

Name: Age: Sex:

Sample: Fasting / Random

Date of Sampling:

Amount of sample collected: ……. ml

Samples taken in:

1) Plasma Aliquot 1 ☐ Aliquot 2 ☐ Aliquot 3 ☐

2) Serum Aliquot 1 ☐ Aliquot 2 ☐ Aliquot 3 ☐

3) EDTA (tube 1) → Aliquot 1 ☐ Aliquot 2 ☐

4) EDTA (tube 2)

Any other detail:

Details of Sample Analysis

(1) Plasma Glucose …….. mg/dl

(2) Total Cholesterol …….. mg/dl

(3) Triglycerides …… mg/dl

(4) LDL – cholesterol …… mg/dl

(5) VLDL – cholesterol …… mg/dl

(6) HDL – cholesterol …… mg/dl

N.B.: * Please tick the no. aliquots prepared.
** Aliquot 1 of Plasma and Serum to be retained by the centers for Glucose and Lipid estimations. Aliquot 2 & 3 of Plasma and Serum and aliquot 1 & 2 of EDTA to be sent to the Coordinating Lab., C.N.Center, AIIMS, New Delhi.

Annexure III

AIIMS EXTERNAL QUALITY ASSURANCE PROGRAMME

Enclosed herewith one vial containing lyophilized serum labeled MSEQC. Reconstitute in 1 ml distilled water, mix by swirling and keep for 30 min to ensure complete mixing. Assay for Total cholesterol, Triglycerides, HDL- cholesterol and Glucose on the same day. Reports should be dispatched to the coordinating lab by e-mail or fax.

Center Name:

Total Cholesterol	MSEQC no.	mg/dl
Triglycerides	MSEQC no.	mg/dl
HDL-Cholesterol	MSEQC no.	mg/dl
Glucose	MSEQC no.	mg/dl

Date of receipt at the center:

Date of Reconstitution & Analysis:

Return results by:

E-mail lakshmy_ram@yahoo.com or g_ruby2123@yahoo.co.in

Fax: 011-26167397 Attn Dr R.Lakshmy / Dr Ruby
Ph: 26594426

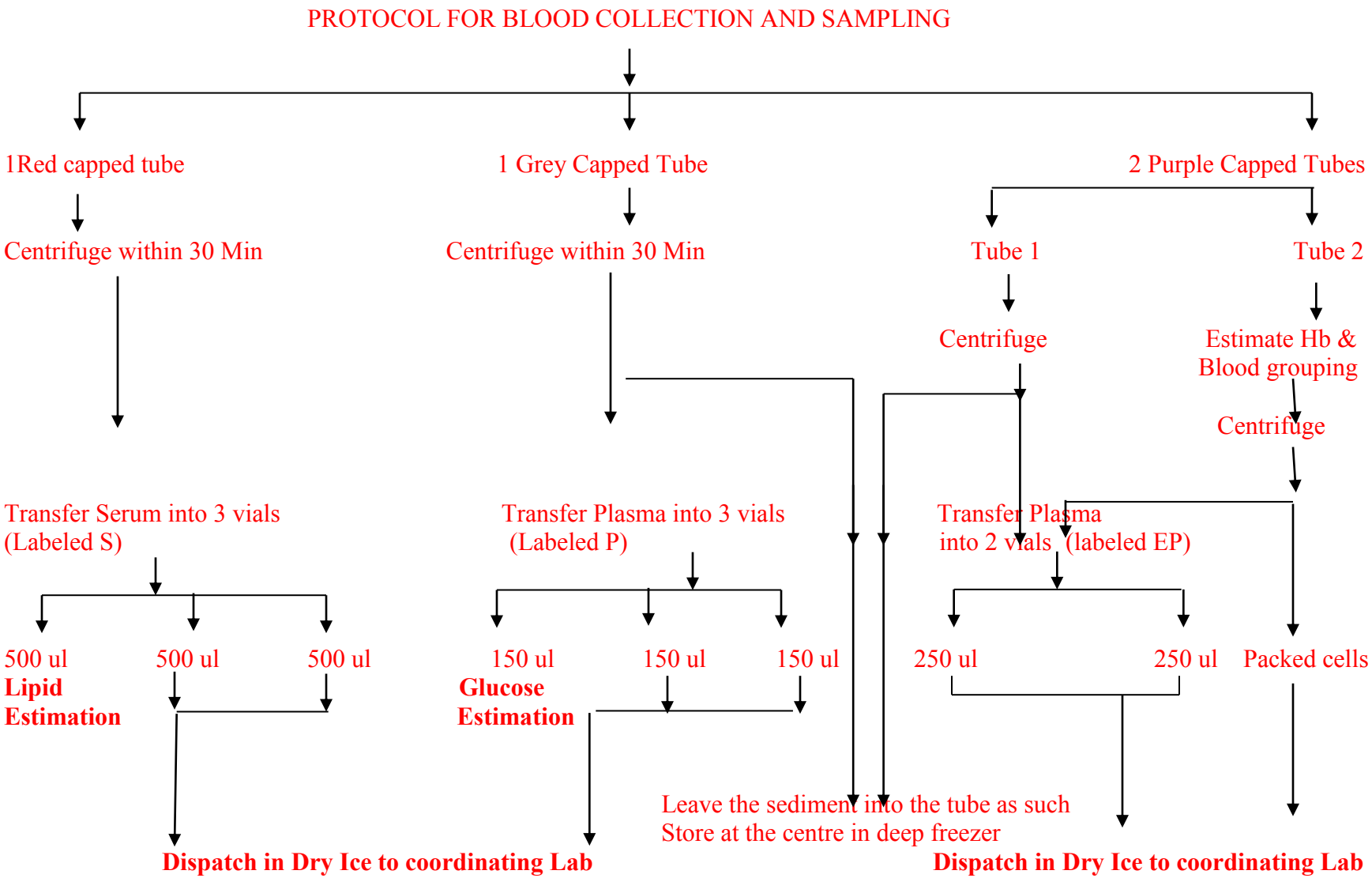
Annexure IV

INDIAN MIGRANT STUDY-BLOOD REPORT

Name:		
Age:	**Sex:**	
Address:		
Blood haemoglobin:	_____	**[gm/dl]**
Blood group:	_____	**[A, B, AB, O]**
Plasma glucose:	_____	**[mg/dl]**
Total cholesterol:	_____	**[mg/dl]**
Triglycerides:	_____	**[mg/dl]**
LDL – cholesterol:	_____	**[mg/dl]**
VLDL – cholesterol:	_____	**[mg/dl]**
HDL – cholesterol:	_____	**[mg/dl]**
Advice:		

Date:
Signature:

FLOW CHART


PROTOCOL FOR BLOOD COLLECTION AND SAMPLING
1Red capped tube
1 Grey Capped Tube
2 Purple Capped Tubes
Centrifuge within 30 Min
Centrifuge within 30 Min
Tube 1
Tube 2
Centrifuge
Estimate Hb &
Blood grouping
Centrifuge
Transfer Serum into 3 vials
(Labeled S)
Transfer Plasma into 3 vials
(Labeled P)
Transfer Plasma
into 2 vials (labeled EP)
500 ul
500 ul
500 ul
Lipid
Estimation
150 ul
150 ul
150 ul
Glucose
Estimation
250 ul
250 ul
Packed cells
Leave the sediment into the tube as such
Store at the centre in deep freezer
Dispatch in Dry Ice to coordinating Lab
Dispatch in Dry Ice to coordinating Lab

Medical management:

- overall assessment by history ,physical and biochemical examination
- awareness of symptoms and signs which need referral
- interpretation of anthropometry and biochemical result

Some of the common medical conditions are:

Hypertension

- We all have a blood pressure – the higher the blood pressure the greater the risk of heart attack and stroke
- If blood pressure is always over 160/90 drug treatment usually needed
- Very low blood pressure is quite common and is not a problem

Things that raise blood pressure

- Temporary raised BP
  - Excitement, stress, pain
  - Exercise, cold temperature
  - Some drugs used for common cold
  - Pregnancy
- Permanent raised BP
  - Alcohol
  - Obesity
  - High salt intake

Precautions

- Make sure person is at rest
- Do your best to make them relaxed
- Check the room temperature and if very cold (aircon), get to a comfortable temp.

What to tell the participant

- If blood pressure is below 140/90, you can tell them that they are okay, their blood pressure is normal
- If blood pressure is over 140/90, check:
  - Correct cuff size?
  - Pregnant?
  - On cold medications?
  - Stressed/not rested for 5+ minutes

If BP over 160/90

- Ask they on blood pressure treatment?
- Check whether they:
  - Are obese
  - Drink alcohol
  - Take lots of added salt
  - Smoke
  - If any of these, give health promotion advice
  - Should have repeat measure in a few weeks

If BP over 200/110

- This is very high and unlikely to come down much on repeat measurement
- They are likely to need blood pressure lowering treatment:
  - First line: diet change, lose weight, stop alcohol
  - Second line: see physician for blood pressure drugs and monitoring

What is diabetes?

- Two types – that in adults is caused by failure of the body to use sugars properly – too much insulin is produced – insulin resistance arises and blood sugar rises.
- Primary causes are high sugar/fat diet, obesity and low levels of activity
- Prevention is based on reducing sugar and fat diet, losing weight and increasing exercise levels

Raised blood glucose

- If high, check whether fasting or not
- If fasting, and above 10mmol/l, likely to be diabetic – need to inform person to get repeated and seek medical advice
- For levels between 7-10mmol/l, will probably be lower on repeat, so advice get repeated and seek medical advice

High blood cholesterol

- Cholesterol is needed for life – one type of cholesterol (HDL) is good if it is high, the other type (LDL) is bad if it is high
- The higher the level of LDL cholesterol the greater the risk of heart attack
- A level about 8mmol/l is too high for comfort and should be lowered.

Lowering blood cholesterol

- Reducing fats in the diet is the first step

- Reducing other risk factors (e.g. smoking, lack of exercise) very important to do
- If cholesterol still high will need to get medical help for drug treatment – statins are very effective but expensive.

Anaemia

- Anaemia is a condition in which the number of red blood cells (RBCs) is reduced, or there is a reduction in the level of haemoglobin in the blood. Blood haemoglobin levels below 13gm/dl for males and 11gm/dl for females.
- There are a number of causes of anaemia, the main ones being dietary, or through blood loss. Other causes of anaemia include: folate deficiency; vitamin B12 deficiency, as in pernicious anaemia; certain bone marrow diseases etc.
- Symptoms of anaemia include: fatigue, headaches, pallor, palpitations, poor concentration, shortness of breath, impaired digestive functioning, weakness and lack of strength.
- Treatment is based on the cause of anaemia. For mild to moderate cases, treatment can be in the form of dietary modifications and iron supplements. Any subjects with severe anaemia need to be referred.

Who should be referred?

- Medical help can be obtained from the senior medical staff at the Medical College
  - Complaining of possibly serious medical conditions
    - Chest pains on exertion, breathlessness, severe pain
  - Wanting a second opinion for known medical conditions
    - Discuss with SRF and negotiate with College

<u>Abnormal results and Referral:</u>
All reports will be communicated to the subjects. For any abnormal results based on the clinical examination and laboratory results like anaemia, high blood pressure or sugar etc. the subject will be seen by medical officer and if required referred to the IMO (?) or the associated local medical college hospital.
<u>Postal reports</u>
Reports to the subjects coming from a distance will be sent through post The SRF will communicate the reports based on subject's clinical and biochemical parameters. In the report the following will be communicated:
Normal/abnormal results
Written advice
Need for check up/follow up with the local practitioner as and if required.

<u>First aid:</u>
The doctor will provide first aid as needed or refer the subject to the local medical college hospital as needed.
In our scenario, we are most likely to encounter cases as:

<u>Heat exhaustion</u>:

If you suspect heat exhaustion, get the person out of the sun into a shady location. Lay the person down and elevate the feet slightly. Loosen or remove person's clothing. Cool the person by spraying him or her with cool water and fanning and have the person drink cool water. Monitor the person carefully. If person shows symptoms and signs of a heatstroke like temperature greater than 104 F, fainting, confusion or seizures, the person should be immediately referred.

Fainting

If a subject looks or feels faint during the procedure, it should be discontinued. The subject should be asked to place their head between their knees. They should subsequently be asked to lie down. If they are happy for the test to be continued after a suitable length of time, it should be done so with the subject supine and the circumstances should be recorded. They may wish to discontinue the procedure at this point, but willing to give the blood sample at a later time.

Needle stick injuries

The wound should be encouraged to bleed. The wound should be washed with soap and warm water, if available. Other hand cleaner may be used if water is not available.

Bruises

For any bruises following the blood sampling, elevate the injured area and apply ice or cold pack for 30 to 60 minutes at a time for a day or two after the injury.

Qualitative study

What makes migrants from rural areas particularly vulnerable to develop obesity and diabetes, is the central question to be addressed by social science, especially anthropological research in this multidisciplinary study. What are the risk factors in this regard as people move to urban areas? And, what risk factors are by corollary absent among their rural counterparts? Human beings across time and space attribute meanings to their actions. The qualitative study will explore in detail, *in situ*, the meanings of risk factors, health, illness, tendency for obesity and diabetes among the migrants in urban areas and their non-migrant siblings in the rural areas. Perceptions of health and illness, and the preventive and/or remedial measures there of will be explored through a life world perspective in both rural and urban settings to peep beneath the skin and to obtain the emic view of people in general. Health and illness are not matters people like to share openly with others. These come to the surface through time spent with the people in field where ideas get caught rather than reported. The sentinel study and the epidemiological and clinical study data will throw up cases which can then be pursued as they come along during the fieldwork through the anthropological method of study. Grounded theory approach in the conventional anthropological fieldwork leaves immense scope to constantly review and incorporate newer issues that get unearthed in the process. The fluidity of the qualitative study shall complement the rigidity of the survey which binds the study at the onset itself, once for all. The flesh and blood of the narratives will be supplemented by the large scale data provided by the survey. Life sciences, especially human biology and medicine fall between the hard core natural sciences, such as physics and the soft ones, such as sociology/social anthropology. A study that can afford a combination of survey and anthropological fieldwork method is ideal for medical research.

The study would involve the presence of the anthropologist in the filed and then for the analysis and report writing. Two Ph. D students, one focusing on the urban and the other on the rural siblings of the urban respondents will be ideal to get a larger, in-depth picture of the life as people live on the ground and assign meanings to their activities in daily life. One of the principal co-investigators being a sociologist/anthropologist, the study hopefully will benefit form a truly interdisciplinary input.

Database operation/management

Instruction sheets are attached for setup & operation of the Database in the following pages

Data backup and transmission
Apart from the Daily Backup option it is also necessary to take backup periodically i.e. weekly (once in a week- on Saturday) which can be stored in separate folder. Also the same is to be stored in a removable storage media i.e. CD Rom to avoid data loss due to hard disk crash or any other reason.

Data Transfer – Data to be transferred to Bristol via Delhi in the encrypted form using option "IM1 Export Data to Encrypted File" from the menu system in the Pre-Admin_Database.

Instructions for setting up Indian Migrants on a single PC

Some basic assumptions:

1. Some form of zipping program is loaded on the PC at each centre. Under Windows XP this is build in. You can access it merely by pointing at a file and then clicking on the right hand mouse button and selecting "Extract to here". Under windows 2000 or older you may need to download a copy of WinZip from the internet and install on that PC. Installation may require administrative privileges.
2. All PCs are running MS Office XP.
3. File formats:
   ZIP means is a WinZip archive
   GZ means file is in GZIP format(WinZip and other programs can read it)
   if the filename begins with "enc_" then this file is encrypted using an RC4 Variant algorithm
   Note that combinations of the above can occur eg if the filename begin in enc_ and ends in .ZIP then such a file was zipped first and then encrypted. To get the original back you need to decrypt first and then unzip.

To install the dbase at a given centre you should do the following:

1. Create a folder on you hard disk to store the downloaded files eg c:\download\
2. Download the Utilities file and store in the folder created in step1
3. Unzip the utilities file and extract its contents in the folder created in step1
4. Download the appropriate file for the centre in question from the FTP server and store in the folder created in step1
5. You should now have a number of files in your folder, including encrypt_decryptv6.mdb
6. Double click on this file to run it. Use it to decrypt the encrypted file you downloaded.
7. After this is completed you should end with a file which is the name of the downloaded file but with the prefix "dec_" . This file is zipped using WinZip so you will need to unzip it as before. You should now have a file with a name
   PreAdmin_IM_centrename.mdb
   where centrename will be centre you are dealing with.
8. The next step is to create the directory structure on you hard disk. To start with I am assuming that you will operate on a single PC. If a given Centre develops a

need for sharing over a network then let me know and I will explain how. Create the following folder structure
c:\indianmigrants\
c:\indianmigrants\backups\
c:\indianmigrants\bin\
c:\indianmigrants\master_data\
at the level c:\indianmigrants\ you may wish to create additional folders such as
c:\indianmigrants\labels\

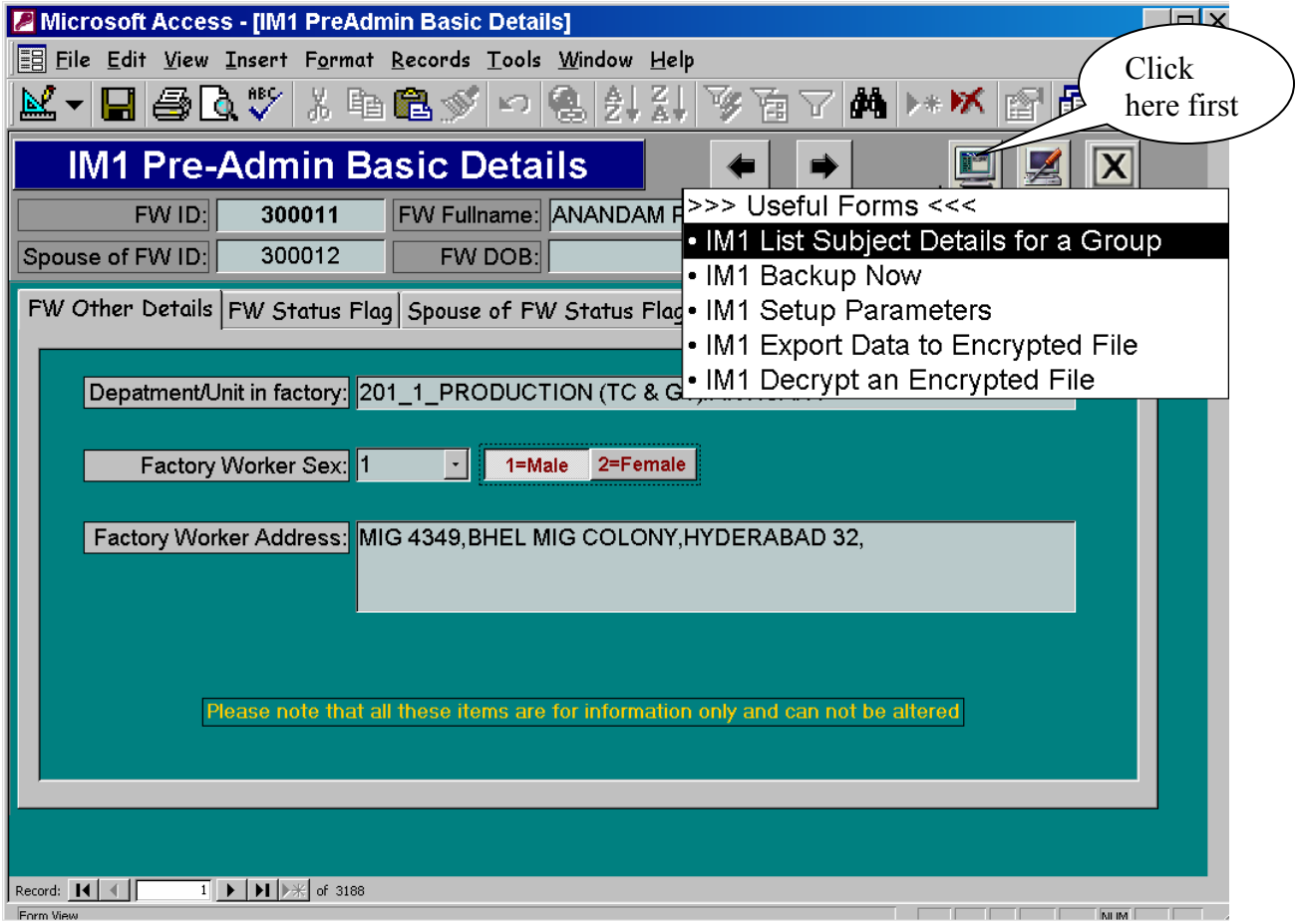
9. Next you need to move the vital files in place
   c:\download\ PreAdmin_IM_centrename.mdb moves to
   c:\indianmigrants\master_data\
   and the file
   c:\download\GZIP.EXE moves to c:\indianmigrants\bin\
   Suggest you also move Cupertino FTP software and encrypt_decryptv6.mdb to the folder
   c:\indianmigrants\bin\
10. You should now double click on
    c:\indianmigrants\master_data\PreAdmin_IM_Bangalore.mdb
11. Once it starts you should select "IM1 Setup Parameters" and make sure that all the parameters are pointing to the right place in folder structure
    c:\indianmigrants\
    The Backup frequency should be "once a day" if you want to have a backup every day the first time it starts.
12. Next select "IM1 Backup Now" from the menu system and make sure that the path of the specified file makes sense ie it is the one you want to backup. Ensuring that the frequency is set to 2(always). Test it by pushing the "Backup Now" button and then checking that the backup can be found in the folder
    c:\indianmigrants\backups\
13. If you got this far you can now setup a desktop icon for them pointing to
    c:\indianmigrants\master_data\PreAdmin_IM_centrename.mdb
    which you help them to start up quickly.

There are a number of other issues to bear in mind

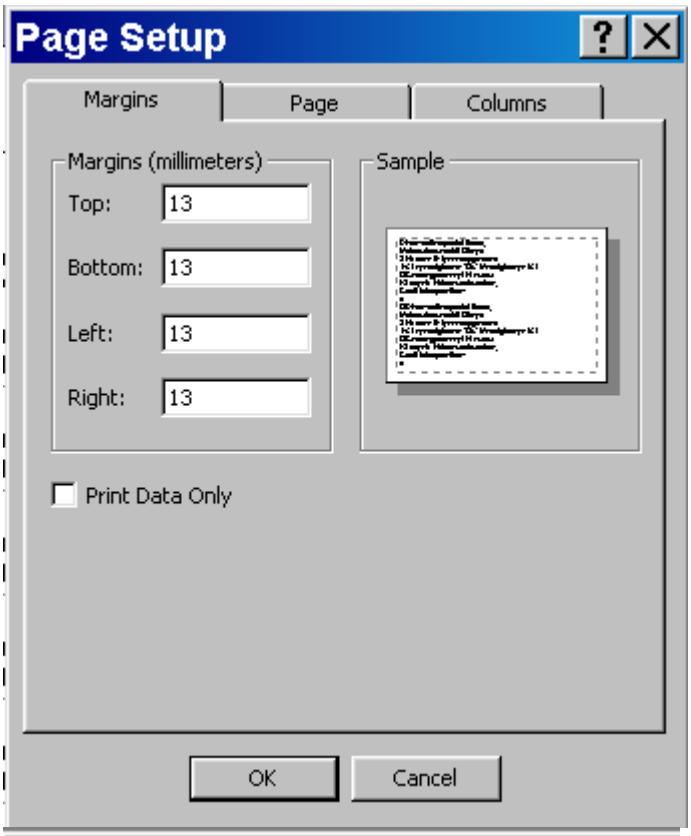
- The query
  IM1 Query to fetch all Random Labels
  should be useful for mail merging labels etc
- The query
  IM1 Query List subjects by group
  should be useful for mail merging labels etc
- In the menus there is the option "IM1 List Subject Details for a Group" can be a useful report for producing a list of each group. Note if you have printer/margin problems, do "File", "Page Setup" and set all the margin around 13mm. Also the page should be "Landscape". Then click "Save".

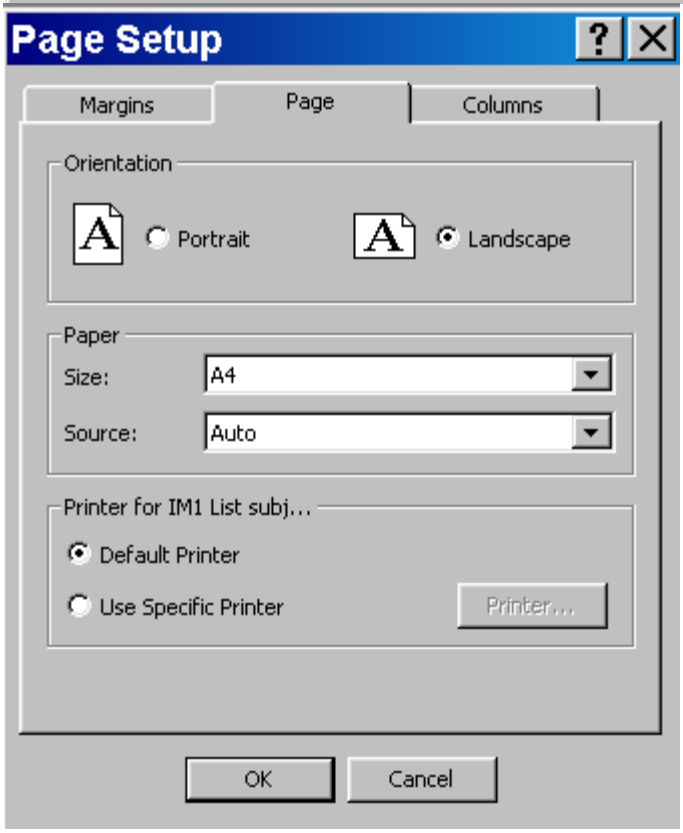
IndianMigrants Labels

Produce a printout of subjects for a given group using the report build into the dbase as shown below:



It will prompt you for the group number. There are 50 subjects in each group. The first group is simply 1. The subjects are organised by department/alphabetic order. Note that you may need to setup margins and orientation when viewing the report as shown below via “File”, “Page Setup” the first time you use it:


Page Setup
Margins
Page
Columns
Margins (millimeters)
Top:
13
Bottom:
13
Left:
13
Right:
13
Sample
Print Data Only
OK
Cancel


Page Setup
Margins
Page
Columns
Orientation
Portrait
Landscape
Paper
Size:
A4
Source:
Auto
Printer for IM1 List subj...
Default Printer
Use Specific Printer
Printer...
OK
Cancel

Before starting the study, please print off for all the entire factory:
1. all the reports, and
2. all the labels (for both factory worker and spouse)

This printing should still be done according to groups.

Take 2 large spiral folders, and call them Master 1 and Master 2. Put all the reports in Master 1 and all the labels in Master 2. Please ensure that they follow the group order in both cases. This is because they are arranged in ID order and so when you will be searching for label etc for a person, you can find it quickly. Because the reports and labels are mirror images of each other, the material in the two folders (master list and labels) will mirror each other. These folders should be kept back at base with the DEO.

It is envisaged that the labels are done via Word using mailmerge. In the dbase there is a query called
IM1 Query List subjects by groupthat can be used as the Data source to the mailmerge. Please note that when doing a mailmerge based on the query mentioned above, Word will start MS Access and then prompt you for the group number. You may wish to run the query when in MS Access to see its behaviour before attempting to mailmerge with it. Please also note that it can prompt you TWICE while you are setting up the mailmerge document and that the prompt comes from MS Access. In other words you may need to switch to MS access, select the group and then go back to Word and then again.

If Word appears to be waiting around doing nothing then it is highly likely that it is waiting for you to select the group number in MS Access.

This can be rather puzzling at first because the behaviour varies according to whether MS Access is already open or not but once you have seen it once it is OK.

We need two mailmerge documents one for the FW and one for the spouse. Details of the fields to be included on each label are given below:
All centres to use 3x6 label sheets. We need 2 labels per FW. One for the FW and another for the spouse.

FW Label should contain

Field Name in dbase	Description
im1subject_id	FW ID
im1fullname	FW full name
im1age	FW age
im1dob	FW date of birth

FW Spouse Label

Field Name in dbase	Description
im1spouse_id	FW Spouse ID
im1fullname	FW name. Ideally it should say before the name "Spouse of:"

FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

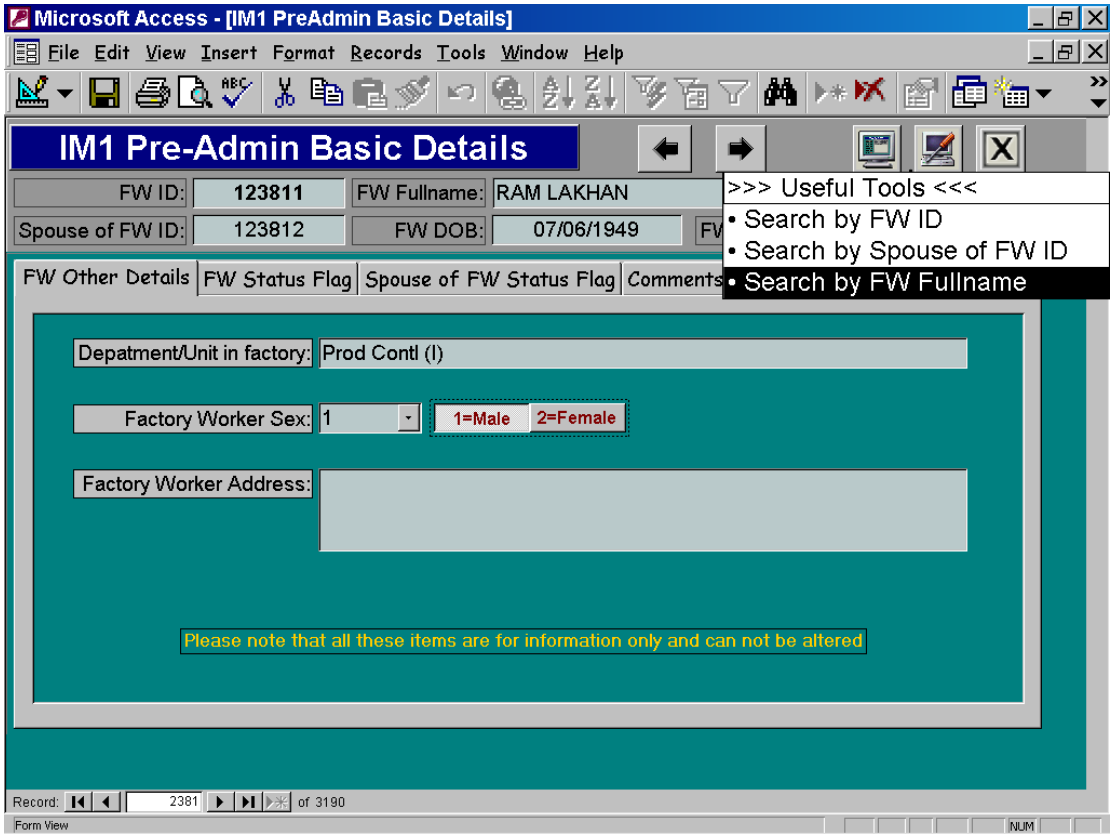
FW ID :«im1spouse_id»
Spouse of: «im1fullname»

«Next Record»FW ID :«im1subject_id»
Name :«im1fullname»
Age :«im1age»
DOB :«im1dob»

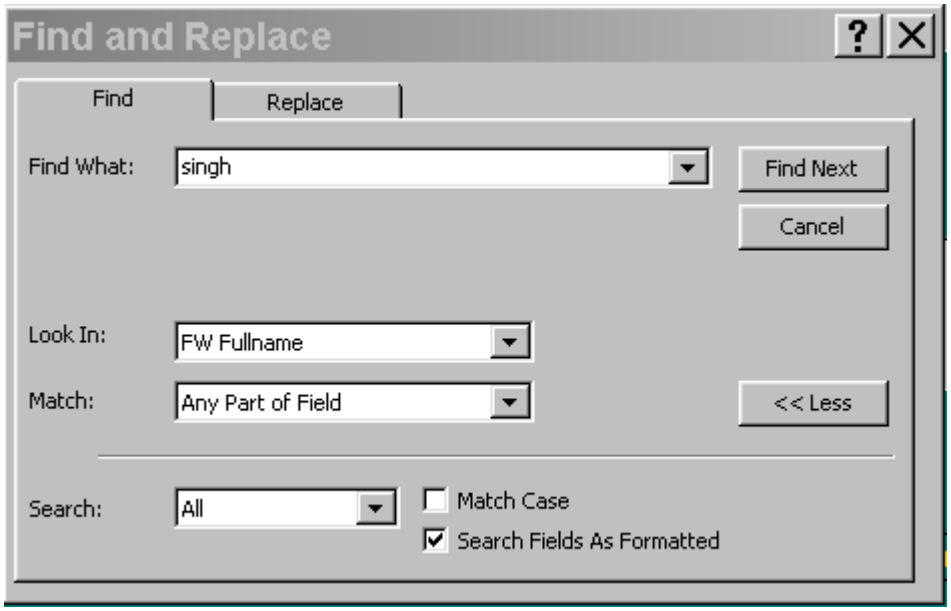
FW ID :«im1spouse_id»
Spouse of: «im1fullname»

Appendix – Searching the database

1. First we need to search by surname (or forename if the surname search fails). We do this by clicking on the "Tools" button as shown below:



and select “Search by FW Fullname”. This will result in the search box popup as shown below:



Please note that the button labelled “more” on the popup has been pressed before the above was displayed. It is vital that the tickbox labelled “Match case” is NOT

ticked. If this is not observed then you will never be able to find anyone! Also note that once the "Match case" has been unticked then it will remain so thereafter on your PC. Also note that the Match dropdown has been changed to "Any Part of the field" from "Whole field". It is vital that these 2 changes are made!

2. The computer will jump to the first occurrence of the name "singh". There could be many of them. We suggest that you check several other details about the record, in particular the name, age and address (note the address can be found in the tab labelled "FW Other Details"). If these 3 do not match then you can press the "Find Next" button and try the next such record. If you find the correct record then make a note of the ID and then carry on clicking the "Find Next" button until there are no more records. You may find that there are several records that match. The reason for this is due to the very poor quality of the factory data originally supplied to us (e.g. the same person may appear several times in the list, with slightly varying details).

3. If there is only one record that matches then the searching is done and you know the correct ID. However if more than one record exists in the dbase then we suggest that you use the one with the LOWEST ID. When looking at Master1 (master list of employees) then the record with the lowest ID is marked as usual and the other duplicates should be marked as "DUPLICATE OF XXXXXX" where XXXXXX is the ID of the lowest. The same should be done with Master 2 (i.e. the labels). If we do not mark the duplicates then at the end we will have a problem, namely that we may end up recruiting (or attempting to recruit) the same person twice.

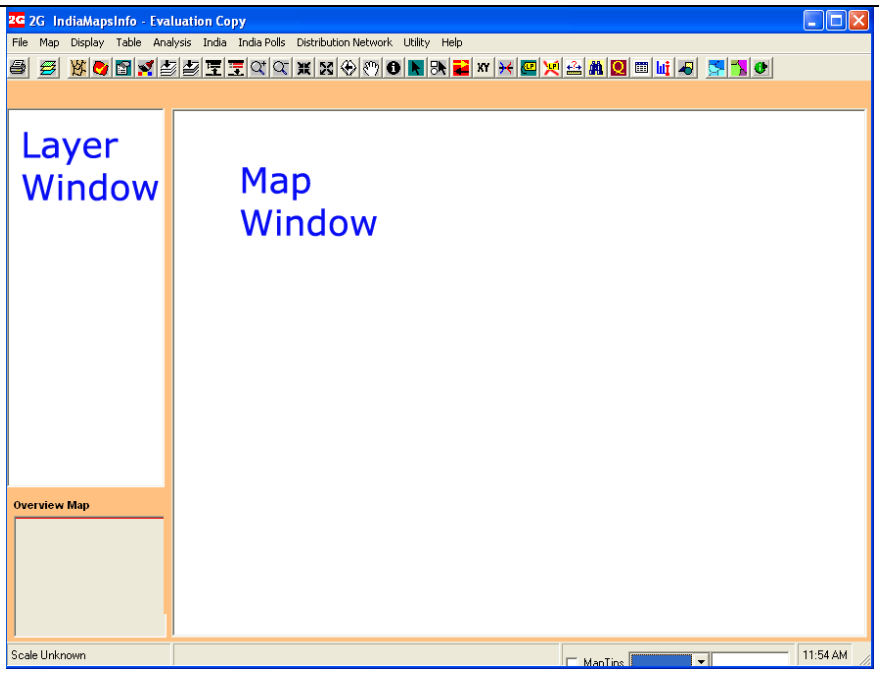
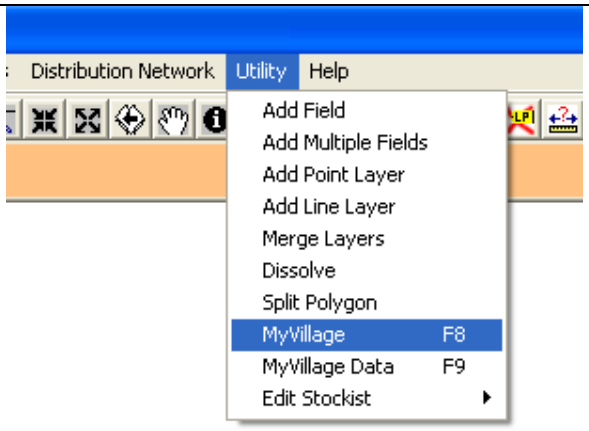
Census coding of place- User manual

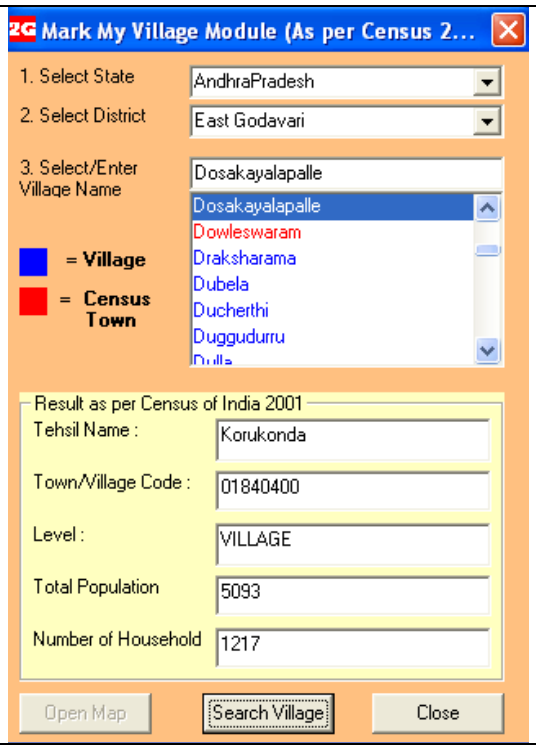
Level: Data-Entry stage.
Objective: This document explains in brief how to capture location details (Census Code) of index person using 2G IndiaMapsInfo© software.

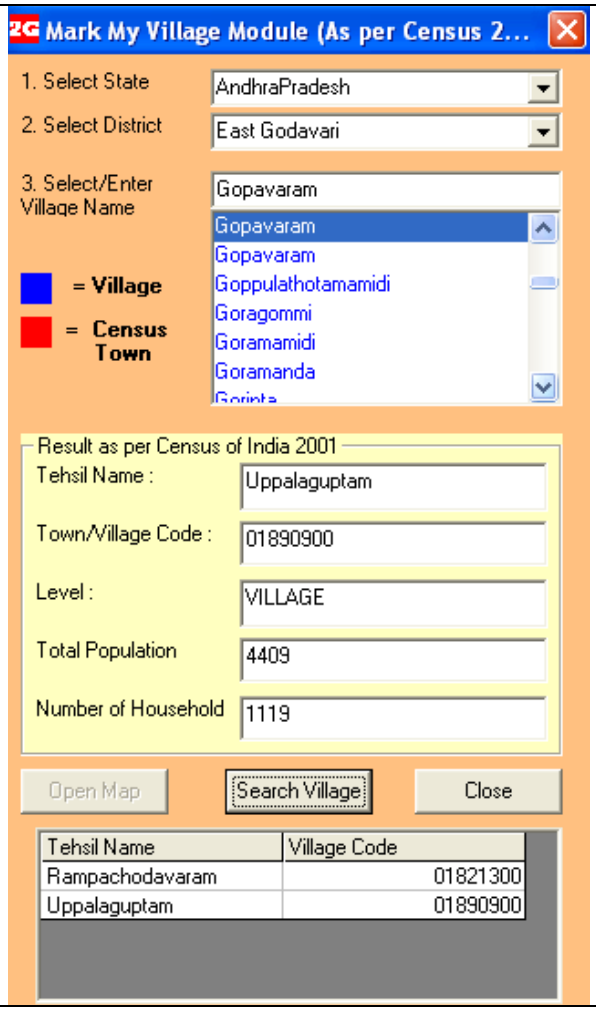
Background: 2G IndiaMapsInfo software product, as name indicates, is a complete map and data index of India's geography. It has details of map-layers of India at State, District, Tehsil, Town and Village levels. It also has details of railway network and state and national highways.

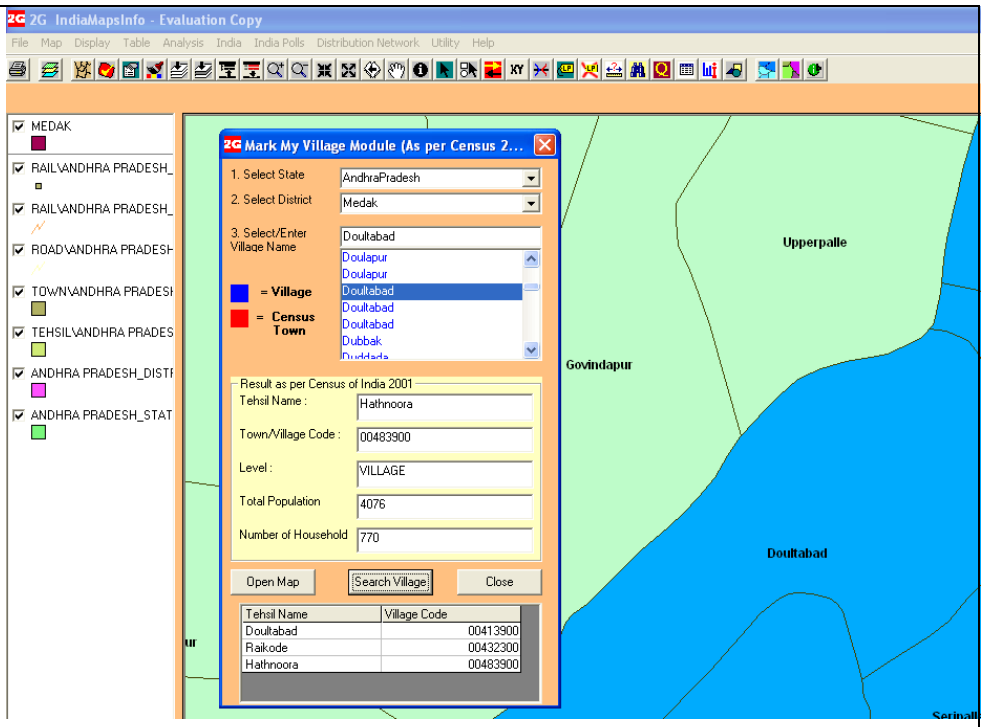
Procedure: Question & Answers:

S.No.	Question	Answer	
1	Where do I find this 2G IndiaMapsInfo© software?	The software gets installed on the PC with the help of InstallShield driven software. After installation in Windows environment, the icon of the application rests on Desktop as shown in the Image Please refer to **Appendix-A** for complete installation procedure.	
2	How do I begin/start this application?	Double-click the 2G (Red color) icon and the application starts.	

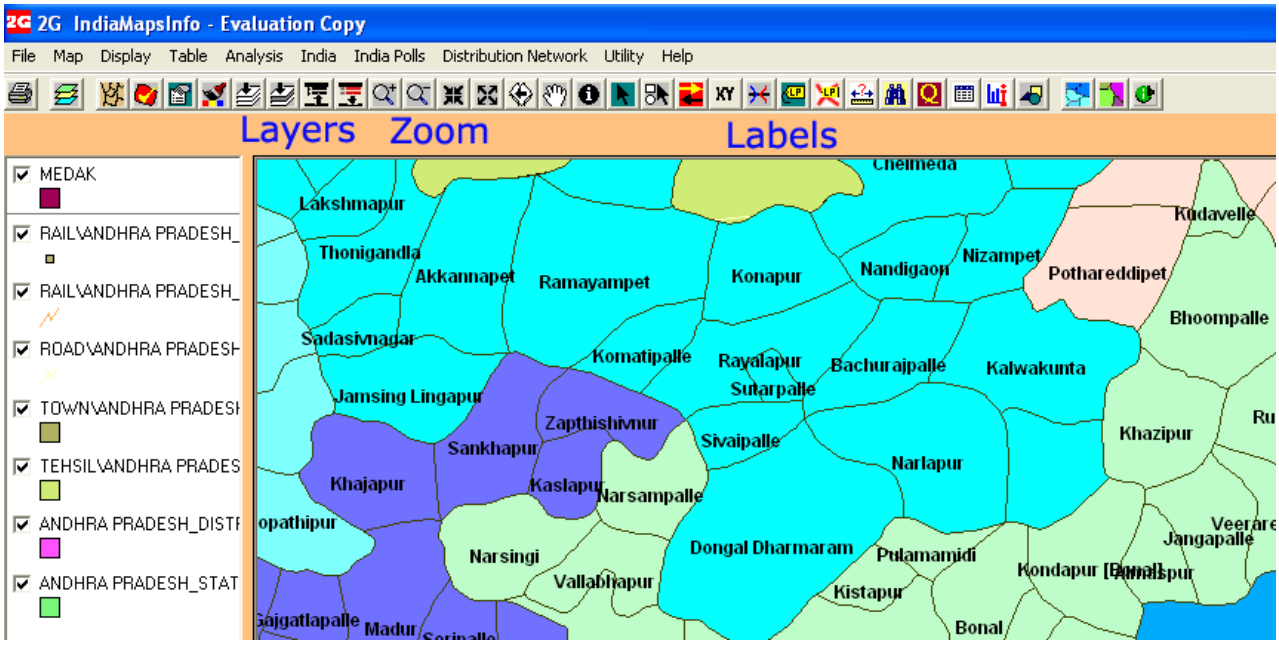
			
3	How do I find the location Census Code?	To find the location census code, you have to activate the **My Village** Module.	To activate **My Village** module, you have two options:
	Option # 1	Activate from toolbar. Press Utility/My Village	
	Option # 2	Press Function key on your keyboard	**F9 – MyVillage Data (only data)** **F8 – MyVillage (both map and data)**
	F9 – MyVillage Data (only data)		
3A	How to get the census code? 1. Select State 2. Select District 3. Enter first few alphabets of		

	village/town in the box and select appropriate village from the list 4. Press **Search Village** and you get Tehsil name and town/village code. **Note:** You can try various spellings/ combinations in case of missing name.	

3A(i)	What if multiple entries exist with same spelling or name? In the case when multiple entries with same spelling (like Gopavaram in image) appear in the list; a window (at the bottom) would open automatically depicting name of Tehsil and village code. Select the appropriate Tehsil & code.	
	F8 – MyVillage (both map and data)	

3B	If I don't get location name by the procedure 3A, how do I search the place using maps? All map layers open for this particular district. Locate the nearest railway station and the place can be located easily both on map and table.	

Some **Quick Keys** of the Software Product



1. To find Village/Town code press F9 (on keyboard)
2. To find Village/Town code with Maps press F8 (on keyboard)
3. To remove all maps press F7 (on keyboard)

4. To zoom in or zoom out use these icons 
5. To label layers, use icons 

At any time, close the utility and start fresh to look for new names/codes.

Communications-

- Communication with the coordinating centre can be through e-mail, post and phone.
- Everyday the DEO/ team leader will check the mail once in the morning and thereafter 2 hourly. Mails which require immediate attention should be given high priority. All such mails must be replied by the evening of the day and even if the mentioned task cannot be done immediately, the coordinating centre should be informed of this and likely date of completion.
- Wherever deadlines have been specified, it is important that these are met. If for some unavoidable reasons it is not possible to complete a task in time, then this should be communicated to the coordinating centre well ahead of time so that a backup plan can be thought of. For effective management, the coordinating centre will also follow these up. If any centre has not replied by date and time (as per the deadline), a reminder will be send by e-mail or phone depending on the urgency.
- All team leaders are to have a date diary-a large size one with a page to date. This is to make note on that day of the diary of the things to be done.Once any action is completed, it can be cancelled off from the list.With the diary you can also plan ahead for actions.
- All communications through mail should be through the official ims id.
- Matters related to biochemistry, database and finances should be addressed to the concerned person and copied to the study coordinator.
- All urgent/important mails need to be acknowledged.
- Anything sent through post (photocopy of questionnaires, bills, attendance etc.) should be preceded by a mail to keep the other centre informed. Again receipt of anything should also be acknowledged by mail.

Indian Migrant Study

Protocol for requisition, transfer, accounting and reporting of funds for the study

1.0 Requisition for and Transfer of Funds

1.1 Expenditures incurred by the local study centres in India would be reimbursed by the National Coordinating Centre at New Delhi, which is, CCDC, New Delhi.

1.2 A maximum of 15% of the total estimated expenditure of the centre for the study would be transferred to the study centre, as advance, upon receiving of a formal request for advance from the centre. Thereafter, transfer of funds would be on monthly cycles, on reimbursement basis, based on the actual utilization of the funds and on receipt of statement of accounts within stipulated time.

2.0 Accounting of Funds

2.1 Funds transferred shall be kept in a designated bank account. The funds of this project, at any point in time, shall not be diverted by the study centre for any other study or project, even if, such study and/or projects are carried-out or implemented in association/collaboration with CCDC, New Delhi.

2.2 Systematic accounts for the expenditure incurred shall be maintained by the study centres, either in computerized or in manual form. The accounting records shall include:

- All vouchers serially numbered and filed in reverse chronological order, for expenditures incurred. It is suggested that the centres should use different number sequence and separate files to keep cash vouchers and bank vouchers.
- All supporting documents of the vouchers
- Photocopies of all cheques issued
- A cash book recording details of all cash withdrawals and cash payments made on daily basis, with daily balances (Preferably as per Proforma-1)
- A bank book recording details of all cheques issued, showing end of the month balance.
- A copy of the monthly statement of account from the bank; in cases where the centre is using a single bank account, a certification from the Principal Investigator (PI) of the balance of funds of this project in the bank account.
- A bank reconciliation statement reconciling the balance of funds in the bank account as per the bank statement and as per books of accounts, to be prepared every month, as on the last day of the month.
- A funds reconciliation statement reconciling the funds received as advance for the project, unexpended funds available in bank account and as cash in hand, outstanding advances to the project staff and amount claimed for

reimbursement from the National Coordinating Centre, as per monthly statement of accounts.

2.3 The study centre shall provide access to any of the authorized representative of CCDC to verify the accounting records pertaining to this study, during the course of the study and for a reasonable time period, thereafter.

3.0 Documentation for Expenditures

3.1 For all payments by cheque, there shall be a proper bill/invoice from the party concerned, original of which shall be attached with the voucher.

3.2 After making payment, it shall be clearly mentioned on the bill/invoice that the payment is made out of Migration Study and also the cheque number and date of the cheque shall be written on the bill/invoice.

3.3 All vouchers shall be approved by the Principal Investigator of the project.

3.4 Expenses, which may be incurred by the local study centre, would be governed by the following protocol, subject to availability of unspent balance of project budget:

S.No	Nature of the Expenditure	Supporting Document
1	Salary to the Project Staff	Project staff for this study would be directly appointed by CCDC. Monthly salary as per their appointment letter shall be paid by cheque/DD by CCDC, based on attendance report from the study centre. Monthly attendance report from 26th of the previous month to 25th of the current month shall be sent by email on 26th of every month for timely release of salary.
2	Local Conveyance of staff – Own vehicle	Copy of the registration book and a copy of driving license should be submitted for records. The vehicle has to be self-owned or owned by any of the close relatives (Parents, Brothers or Sisters). In cases it is not self owned, the owner of the vehicle should give a declaration on plain paper that s/he has given the vehicle for the exclusive use of the project staff concerned at his/her risk and cost and s/he has no objection for the project staff making use of the vehicle for official

		purposes. Once these are documented, local conveyance for own vehicle usage, as per fixed rates applicable per month, shall be paid to the staff concerned, along with his/her monthly salary.
3	Local Conveyance – Others	For any local conveyance for official travel within the city, the payment shall be based on a local conveyance claim, stating date, purpose and mode of travel and the expenses incurred by the concerned staff, duly signed by him/her and approved by the PI. Local conveyance on any day shall not be more than Rs. 100 per staff.
4	Local Conveyance – Hired Vehicle	To the extent possible, payment for all hired vehicles should be by cheque. However, in exigencies, payment may also be made in cash. Payment shall be based on a proper bill from the service provider, giving details of the vehicle number, opening and closing reading of the speedometer and start and end time. The bill shall be certified by the user of the vehicle, before the payment is released, stating the purpose and place of travel for which the vehicle was used.
5	Refreshments	For refreshments to the participants and accompanying persons during the local camps organized by the centre and

		for refreshment in the project office, for participants and persons a maximum of Rs. 20 per head may be incurred by the Project Officer concerned. The staff on duty would also be reckoned for purposes of refreshment. Further the total expense could be ± 10% to allow flexibility to the project offices. At least a *katcha* receipt/bill with date from the shop where such payments are made, which shall be the basis for the cash vouchers. A list of study participants with their identification number and name of the accompanying person/s and a list of project staff on duty on that day shall also be attached with the voucher.
6	Courier Expenses	As the project is expected to involve a lot of couriering of samples and data to the coordinating centre, the local centre shall negotiate and enter into a rate contracts with a courier agency of repute. The negotiation, *inter alia*, shall include the condition that the agency shall take cheque payment on monthly basis, for all couriers sent during the month. The monthly statement of the courier shall be supported by copies of proof of deliveries for all the individual couriers sent from the project.
7	Postage Expenses	Postage expenses towards

		registered letters sent shall be reimbursed in cash, based on the original receipts for the Registered Post, issued by a Post Office.

8	Stationery/Consumables & Photocopying	All payments for purpose of stationery/consumables and photocopying, over Rs. 1000/- shall be by cheque. For minor expenses below Rs. 1000/- payment may be made in cash, provided there is a proper bill clearly indicating the item purchased, quantity and rate. Photocopying bill shall be only for the photocopying strictly pertaining to this project. Therefore, only a part of the monthly photocopier maintenance bill shall be booked to this project.
9	Telephone Expenses	Telephone expenses which may be booked to this project are for calls made to contact the siblings of the employees, to contact the coordinating centre at Delhi and other official calls as may be necessary. Monthly rentals for a maximum of one fixed line phone and one mobile phone can be charged to this project. However only part of the usage charges of the phones, as per STD usage list provided by the service provides, which pertain to the project may be charged to this project. For calls made from public telephone, payment may be made in cash, as per original bills to be attached with the cash voucher.

10	Travel reimbursement and other payments to participants	Payment for the travel reimbursement and for other incidental expenses to the study participants (relatives) shall be as per details given in section 5 below.
11	Payment towards purchase of Assets or "Non-expendable goods"	All assets for the project shall be decided only on approval from the Project-in-charge at the National Coordinating Centre. All asset purchased shall be in the name of "Centre for Chronic Disease Control, New Delhi".

4.0 Reporting for funds utilization

4.1 The study centres shall send statement for the expenditures incurred for the project as per proforma-2 on monthly basis. Expenditures incurred for a particular month shall be submitted by 7th of the subsequent month. In case 7th is a holiday, the statement will be due on the immediately next working day. A fund reconciliation statement should also be sent along with the expenditure statements, giving the following details:

Total Funds Received till _____ :
Less:
Cumulative Expenditures Incurred:
Advances paid from the project funds:
Balance of Unutilized funds as on _____ :
Available in the form of:
Bank Balance as on _____ :
Cash Balance as on _____ :

4.2 The statement shall be sent by email to the following email ids:
tanica@ccdcindia.org
pksriraman@ccdcindia.org
neelima@ccdcindia.org

4.3 A hardcopy of the statement along with copies of all supporting papers be sent by courier to the designated project in-charge at the coordinating centre, i.e., Dr. Tanica Lyngdoh. The centre should try and send this courier on the same day the statement is emailed, to avoid payment delays to them.

4.4 For all statements received on or before the due date, a cheque/DD would be couriered to the centre by 15th of the month. In case any clarification is required for any particular expense claimed in the statement, payment, except of the item for which clarification is required would be released to the centre. After necessary clarification is received the balance amount, as payable, would be released. All payments to the centre shall be on reimbursement basis and hence, all the expenses shall be incurred by the centres for and on behalf of the coordinating centre, i.e., Centre for Chronic Disease Control. Therefore, to the extent possible, all the bills/invoices raised to Centre for Chronic Disease Control.

4.5 Further, any assets that may be purchased or supplied as a part of the project shall be treated as "Assets of CCDC - held in trust" by the local centres, in their books of accounts. Disposal and use of these assets, at the end of the project would be communicated subsequently.

5.0 Reimbursement to the Relatives

5.1 The level of reimbursement offered was arrived at using the principles explained in this section. These do not need to be routinely explained and reimbursement should be offered, as far as possible, on a lump sum basis. However, understanding of these principles may be useful at times for clarification or in unusual circumstances where an appropriate level needs to be calculated. But it is stressed that as far as possible, reimbursement should be paid out on lump sum basis using the suggested scales. In cases of doubt, please err on the higher side remembering that participants are volunteers and are under no obligation to participate. Payment shall be made in vouchers as prescribed in proforma-3.

5.2 Participants are classified as follows

a) Index person (factory employee or spouse)
b) Intra-city relative (relatives resident in the same city as the clinic (this may differ in cases of local camps)
c) Day-travel relative (relative living outside the city but up to 2.5 hours travel from the clinic)
d) Overnight stay relative (living between 2.5-6 hours travel from clinic; thus needing to be away from home for up to 2 days)
e) Long-distance relative (relative living beyond 6 hours travel from the clinic; thus needing to be away from home for up to 4 days)

5.3 Loss of daily wage will be reimbursed @ Rs.200/- per day. Single day reimbursement should be offered to all (whether they take a day off or not), including index persons. Up to 2 (overnight stay relative) and 4 days (long distance relative) reimbursement is offered to those needing to be away from home for longer than a day.

5.4 Travel allowance is offered @Rs.100 (intra-city travel), Rs200 (day-travel), Rs 300 (overnight-stay), and Rs 400 (long-distance travel). Travel fares are for second-class travel. Where travel fare exceeds Rs 400, excess amount should be reimbursed on production of ticket/receipt.

5.5 Allowance for accommodation is offered @Rs.200 per night (typically one night for overnighters and two nights for long-distance travelers, for a maximum of 2 nights). This reimbursement is offered either to the relative (if the relative makes his/her own stay arrangement) or the index person (if the index person hosts the relative); alternatively nothing is offered if the study team provides accommodation.

5.6 Food allowance is offered @Rs100 per day. This is offered to day-travel (1 day), overnight-stay (2 days) and long-distance (4 days) relatives. For overnight stay, one day's food allowances each for travel and stay (stay food allowance given to relative/index person as appropriate). For long distance, two days food allowance is for travel and two days for stay (hence given to relative/index person as appropriate).

5.7 The lump sums are calculated as follows

5.8 Intra-city relative (Rs200/- wage loss plus Rs.100/- travel fare)

5.9 Day-travel relative (Rs.200/- wage loss plus Rs.200/- travel fare plus Rs.100/- food on the way)

5.10 Overnight-stay relative (Rs.400/- for loss of 2 days wages plus Rs.200/- travel fare plus Rs.100- food on the way plus Rs.200/- for one night's accommodation plus Rs.100/- for one day's food).

5.11 Long –distance relative (Rs800/- for loss of 4 days wages plus Rs.400/- travel fare plus Rs.200/- for 2 days food on the way plus Rs.400 for two nights accommodation plus Rs.200/- for two days food)

5.12 All payments should be based on DISTANCE FROM THE ACTUAL CLINIC SITE AND NOT THE BASE CENTRE.

5.13 Total amounts paid as lump sum as far as possible:

a. Factory worker: Rs 200/-
b. Intra-city relative: Rs 300/-
c. Day-travel relative: Rs 500/-
d. Overnight-stay relative: Rs.1,000/- (Rs 700/- for travel/wage loss plus Rs 300/- for food-accommodation given to relative/index person/neither as appropriate)
e. Long-distance relative: Rs.2,000/- (Rs 1,400/- for travel/wage loss plus Rs.600 for food-accommodation given to relative/index person/neither as appropriate)

Proforma-1

Specimen for Cash/Bank Scroll Book

Receipts					Payments				
Date	Particulars	Voucher No.	Cash	Bank	Date	Particulars	Voucher No.	Cash	Bank
	Opening Balance								
						Closing Balance			
						Details of Closing Cash Balance			
						Rs. 1000 x			
						Rs. 500 x			
						Rs. 100 x			
						Rs. 50 x			
						Rs. 20 x			
						Rs. 10 x			
						Rs. 5 x			
						Coins			
						Revenue Stamps			
						Total Cash			

Proforma-2

Migration Study: _____ Centre

Expenditure & Variance Report for the Month of _____

Sl. No.	Line Item	Budget for the year (From… to……)	Total Exp. Upto end of previous Month (From…… to……)	Budget for the Month	Actuals for the Month	Variance	Total Exp. upto end of the month (From…. to……)	Balance funds available for the rest of the year
1	**2**	**3**	**4**	**5**	**6**	**7=5-6**	**8=4+6**	**9=3-8**

Project Officer **Principal Investigator**

Note: This statement has to be prepared by 5th of every month by the project.

Proforma-3

Travel/Incidental payment to Index Person and Relatives of Index person

A. Details of the Index Person

Name: _____

Study ID No.: _____

Address: _____

_____

B. Details of the Relative of the Index Person

Name: _____ Study ID No.:_____

Address: _____

_____

Classification of the Relative: (Tick the appropriate box)
☐ Intra-city ☐ Day-traveler ☐ Over-night Stay ☐ Long Distance
Address verification Document attached (essential)
☐ Ration Card ☐ Election I-Card ☐ Telephone Bill ☐ Driving License
☐ Any other (Pl. specify) _____
Proof of Travel attached: ☐ Yes ☐ No ☐ Not Applicable
Approx. distance traveled: _____ KMs

C. Details of payment **Voucher No:_____ Date_____**

1.	Travel Cost (Attach a copy of the Train/Bus Ticket)	:	Rs._____
2.	Incidental Expenses	:	Rs._____
3.	Total Amount paid	:	Rs._____

(Rupees _____ only)

Prepared by Verified by Approved by

D. Receipt for payment

Received a sum of Rupees_____ only (Rs._____)
towards my expenses for participation in the Migration Study research project.

Care of the equipment

All the equipments will have to be handled with care. It is the responsibility of the team leader to ensure at the end of the day when clinics are over; fieldworkers who are carrying out the anthropometric measurements will pack the equipments properly and keep in a safe place. In case of any damage to the instruments or loss of instruments, this will have to be communicated to the coordinating centre immediately so that a replacement can be made.

An inventory of the general items as well as biochemistry items will have to be maintained by the centres and sent to the coordinating centre at the end of the month. Any item which needs to be procured and send from Delhi will have to be informed well in advance.

CALIBRATION SYSTEM

Daily Calibration

- All instruments which are being used for measurements in the clinics have to be calibrated on all the days when clinics are held.
- As far as possible, readings for the calibration to be taken on the same 2 fieldworkers everyday.
- Calibration has to be done early morning on arrival at the clinics before the subjects come.
- This has to be entered into a calibration sheet provided and then save d into the PC at the end of the day.
- Calibration needs to be done on active instruments only i.e., the one being currently used. In cases where both instrument is being used at the same time, then calibrations to be done for both.
- These readings need to be reviewed at the weekly meetings and if there is a very wide variation in the readings, then this needs to be communicated to the coordinating centre.
- For calibration of the calipers, measurements of a thin and thick book will suffice.

Monthly Calibration

Besides daily calibration, monthly calibration of the instruments needs to be done. The procedure for this is as below:

Weighing Machine:
This can be done by comparing against standard weights starting from 5kg and above.

Stadiometer:

The metallic tape can be use for this and readings to be taken at 75 and 150 cms on the stadiometer.

Calipers:
Same as the daily calibrations, i.e, using 2 books with different thickness.

BP apparatus:

Comparing it against a sphygmomanometer. It is important however to remember that the same sphygmomanometer to be use throughout the study.

DAILY CALIBRATION SHEET

Date	wt of FW no. (weighing machine no.___)	Ht of FW no. (stadiometer no_____)	measurement of thin book(caliper no____)	measurement of thick book(caliper no____)	BP of FW no. (Omron No____)	Comments

MONTHLY CALIBRATION

Date	Standard weights(5,10, 15kgs) against digital weighing scale (no.__)	Ht of (stadiometer no_____) at 75 and 150 cms	measurement of thin book(caliper no____)	measurement of thick book(caliper no____)	BP of FW no. using Omron No____)	BP of FWno. Using sphymomanometer	Comments

FAQs

Should the spouse who does not normally live in the same household be included as an index person?

- No

What category of relative are different types of cousins?

- Children of brothers/sisters of either parent are considered as first cousins. All other types of relatives should be included in the friend category.

What if a woman (or in some cases men e.g. if elderly) refuses to travel alone?

- In such cases additional payment (50% extra) may be made for an accompanying person. However, the accompanying person is not to be included in the study. If the accompanying person wishes to have him or herself checked, a short examination (or blood pressure measurement) may be considered to ensure cooperation of the family; however, the data will not be recorded.

Can the index person be clinically examined before the relative?

- Preferably not. As the data on index person cannot be used without data on the relative, it is better to avoid collecting data on index persons beforehand as it will be useless if the relative doesn't turn up (despite indicating that they would). As far as possible, clinics should be conducted on the index person either at the same time as the relative or soon afterwards.

Can the index/urban residents be examined at times when there is low attendance of rural relatives, say for example in the harvest season?

- Seasons can have an important effect on the health of the individual and its assessment. Therefore it is important to avoid examining one type of participant during one or the other season. While some seasonal variation in recruitment of participants may be unavoidable (and also time effective), it is important to try and spread out the recruitment of any category of participant throughout the year.

What if the subject arrives to the clinic but is not completely fasting?

- As long as the subject has not eaten or drank anything other than water in the last 4 hours, the sample should be collected and the subject recruited.

Guide for conducting structured interviews

Structured interviews capture vital information. The aim of a structured interview is to measure facts and people's attitudes accurately and in such a way that if one were to repeat it at another time one would get the same answer.

It is, therefore, very important to get the structured interview right. Respondents need to be able to provide truthful answers which reflect their lives. Careful and precise interviewing techniques are essential to ensure the collection of complete, standardised unbiased and accurate data. Much research has been undertaken to identify what works in getting the best from a structured interview and what does not.
For example:

- Interviewers who adopt a business like manner (wearing a dark suit) are less likely to gain trust- responders tend not to give truthful answers.
- Young interviewers obtain less reliable results than older interviewers.
- Male interviewers obtain less full information form male respondents than female interviewers and vice versa.

Response and accuracy is likely to be increased if the interviewer looks happy, appears positive. It is likely to be decreased if the interviewer looks tense. Matching up respondents with interviewers is particularly difficult. It is, therefore, vital that the questions in a structured interview are asked in the same way and that the responses are recorded in the same way by the interviewer.

The following provide essential steps and aids to help conduct the structured interview.

The interviewer

Foremost the interviewer needs to:

- Know and understand what the study is about- inside out.
- Understand the questionnaire
- Be familiar with the pre- coded questions and those which are open
- To be able to conduct the questionnaire in a uniform manner

Good interviewers

- Are sensitive and trustworthy
- Have an ability to establish a rapport with a wide range of people
- Are friendly and positive
- Are good listener and do not interrupt people before they have finished speaking
- Are committed and persevering
- Have the ability to adopt a neutral manner (showing neither approval or disapproval
- Have legible handwriting
- Are adept at leaving the respondent happy
- Are good planners
- Are able to ensure and maintain confidentiality
- dress neutrally- suitable for any kind of home
- Have good intuition about when it is appropriate to approach respondents or not.

The interview

The interviewer must approach potential respondents in a positive manner in order to encourage them to participate. The critical moment is when the interviewer introduces themselves.

Always present your ID Card. Be honest about the study's aims and let them know how long the interview will take. Always provide respondents with details about the study and information on who to contact if should they want to.

Find a place where the interview can be conducted in private without interruptions.

Most respondent want to be seen in the best possible light and will want to give answers that reflect this. They will want to answer in such a way as to please the interviewer. The reliability of the information collected will be dependent on the rapport and satisfactory relationship established during the introduction. If a respondent feels anxious or uneasy they may be less likely to want to provide personal information.

When asking questions, the interviewer must always

- be sensitive to the needs of the respondent; e.g. not sitting in sunlight, comfortable seats etc.
- be encouraging
- use the exact words printed in the a questionnaire, and in the exact order: changing words or sentence orders will introduce serious bias to the study

- speak in a non- judgmental manner
- express polite interest
- read the questions and pre- coded answers out in reasonable volume and speed ensuring the respondent has heard and understood the question
- look at the respondent after each question to pick up on any visual clues of embarrassment or unease
- accurately record the answer on the questionnaire

NEVER

- appear surprised or disapproving
- express opinions or beliefs
- make assumptions about respondents likely answers
- hurry the respondent for answers
- ask questions in a biased or leading way
- ring a category that comes nearest to the respondent's reply. If the code does not exist, record the exact words used by the respondent in their response
- allow long silences to become embarrassing
- apologise for asking personal or embarrassing questions

If the interviewer appears hesitant, hesitant, reluctant, unconfident negative or thinks a question is too personal, then the respondent will be influenced and will decline to give accurate answers. In fact they will encourage negative responses.

It is important to maintain the respondent's interest and motivation throughout the interview.

It is common for respondents to go off the topic and talk about other issues not relevant in the questionnaire. The interviewer has to be skilled to bring respondents back to the point. If this is done firmly from the onset, further problems are less likely to recur. The following phrases may be helpful:
"This is important information that we can cover a little later-can we now focus on"
"What you say is most interesting but could I just ask you now on"

Another problem with respondents who go off the topic is that may have imparted some information that is useful in the questionnaire. Asking them again may give rise to irritability. BUT, it is very important never to assume the answer. To avoid potential irritability-prefix the question with:
"I know you have already mentioned this, but can I just check"

"Now you have already said something about this, but I would like to ask you this question".

It is never a good idea to break off the interview- it compromises the rapport and relationship already established. It is important to ensure that the respondent is fully aware of how long they are committing themselves to the interview.

If interviewers are seriously worried about a respondent (e.g. someone admitting suicidal thoughts or an elderly person being abused), the interviewer should offer to put the respondent in contact with a suitable professional. If accepted, ensure that this is put in writing and signed by the respondent. If the respondent refuses, only contact a professional if it is seen as a case of emergency.

Probing and Prompts

A probe is a stimulus which is used to obtain information form respondents who experience discomfort, hesitation, or feel unhappy to reveal information about themselves. Directive probing techniques are acceptable if one is eliciting factual information. Here it is important to motivate respondents in an undemanding and understanding tone. The aim is to encourage respondents to give accurate information. Probes listed below may help.

"Can you tell me more about"
"In what way"
"Can you describe"
"what sort of (office do you do)"
"Before, writing your answer down, can I just check"

Third Parties

Caution would be exercised when other people want to sit in on the interview. The presence of a third party will always influence the respondent and will lead to biased answers. This is best avoided.

Hesitancy, misunderstanding and non-response

Some respondents may seem hesitant in answering questions and the interviewer could affirm this with "there is no right or wrong answer on this- we just trying to get your ideas. Some will ask the interviewer for their opinion and here it is important not go give opinions but no explain that it is the respondent's opinion that matters. Some may want to answer with a "don't know" and this can have many different meaning E.g. It may mask misunderstanding of the question, (see next paragraph), may not want to impart the

information (use probes), or may genuinely not know. It is important to record such information on the questionnaire.

When respondents genuinely do not and may ask the interviewer to explain it. In this case, the interviewer should repeat the question and if no answer is forthcoming make a not of it on the questionnaire. It is important not to succumb explaining the question. Interviewers will give different explanations evoking different answers.

If a respondent is very reluctant to answer a question, it may help if the interviewer

- Confirms the information given is confidential
- That replies will be aggregated in tables so that individual responses cannot be identified.

If the respondent still feels unwilling to respond, a note should be made of it and the next question pursued.

Ultimately, if respondents refuse to take part or answer any question, their wishes must be respected. The interviewer should apologise for the inconvenience. Most interviewers achieve 8/10 response rate.

Often a respondent will change their minds and a follow-up letter may help

End of the interview

Interviewers must leave their respondents in a positive frame of mind. After the interview, interviewers must:

- Check the questionnaire to ensure all arts are completed
- Must be prepared to spend time explaining the study further
- Emphasise how the information obtained is vital to the study
- Ensure complete confidentiality
- Thank respondents for their willingness to share their experiences
- Ensure the respondent has information and a contact point about the study should they require further information

Reporting System

This will be a two-way reporting system- centres to Delhi and Delhi to Bristol.

Centres to Delhi-

All centres are required to send the weekly reports to Delhi by Wednesday afternoons. Reports for a week will contain data through the last Wednesday to the current Tuesday. The weekly reports to be send to Delhi are:

- weekly summary report
- Fieldworker performance sheet
- Database copies

At the end of each month (on the last Wednesday of the month along with the weekly reports), centres are required to send the following:

- inventory of the general items
- inventory of biochemistry items
- 2 copies of filled questionnaires/fieldworker
- attendance signed by Principal investigator and send to Mr. Sriraman/ Neelima by the 25th of each month.
- Statement of expenditure with supporting documents for that current month.
- Photocopies of the reimbursements form/identity proofs.

* Each fieldworker will also maintain the daily progress report which can be reviewed by the team leader every week at the weekly meeting.
** At least once in a month, a meeting with the Principal investigator/IMO to be arranged so as to keep them abreast with the activities carried through the month and also discussing any issues/problems requiring solution.

IMPORTANT: All reports to be prepared by the data entry operator and reviewed by the team leader before sending it to the coordinating centre.

Delhi to Bristol

Summated weekly reports of the following to be send every Thursday to Bristol:

- fieldwork progress
- data quality
- database

Data quality systems

Regional Centre Level

Every week preferably Wednesday mornings before sending the reports or Tuesday afternoons, the team leader should institute an hourly quality assurance meeting with the team. The team leader should randomly pick 2 completed questionnaires for each fieldworker and go through them along with the team and look for any incorrect/incomplete items etc. The idea is to remove any doubts/confusion that exist so it is imperative that the all the team members are attending the meeting and are aware of the issues. Any issue which requires clarifications from the coordinating centre should be communicated at the earliest. The team leader will conduct this exercise with all the fieldworkers and enter it into the Fieldworker performance spreadsheet which needs to be sent to the coordinating centre along with the weekly reports. It is important to remember here that the questionnaires checked should be the ones that have been filled in the current week and not the earlier weeks so as to ensure that the same errors are not repeated. Also any issues/ problems relating to the activities carried out in that particular week could be discussed in this weekly meeting.
Again it would help if the data entry operator while entering the data could crosscheck for any data entry mistakes- any errors noticed could be communicated to the concerned fieldworker and clarifications sought.

IMPORTANT: Each centre should identity and train a backup for the position of the SRF, team leader, data entry operator and laboratory technician so that activities can continue without any interruption in case somebody is not around.

Coordinating Centre Level

At the coordinating centre level, data entry checks will be carried by reviewing the questionnaires sent by the centres at the end of each month. However, a summated report of the data quality based on the weekly fieldworker spreadsheet sent by the centres will be communicated to Bristol every Thursday along with the weekly reports.

Filing System

1) ***All the questionnaires filled should be filed appropriately***. Each fieldworker should have his/her own box to keep questionnaires that he/she is still working on.
2) For completed questionnaires pending for data entry, one separate box can be maintained. All questionnaires in this box should be filed according to ID. For easy management, boxes with ranges of IDs starting in a series can be tried. For each factory worker in the database, there will be four types of subjects-the worker, the spouse, the relative of worker and relative of spouse. All questionnaires relating to a particular factory worker which means RIQs of factory worker /spouse and CQs/diet/paq for all- factory worker, spouse, relative of worker and relative of spouse to be considered as a complete pile and filed.
3) There should be separate boxes for spouses that are not there in real life (i.e. questionnaires for imaginary spouses); such questionnaires should be stored in the box by ID order.
4) There should be a box for subjects not in the database (do not enter them in the database) they will be looked at later.
5) If you have completed questionnaire on a subject and applied label and after few days found another person, whose information matches the same ID on the database, *do not print a fresh label*. Put all these duplicate questionnaires in a box and these will be looked at later.

Clinics

For the clinics, every centre will maintain about 100 file folders. On arrival of a subject to the clinic, a file folder containing the following will be handed over to him/her by the peon who is receiving them. The file folder for factory worker/spouse will contain the following:

- Participant Info sheet
- Consent Form
- Filled RIQ
- Clinic Questionnaire
- Diet/ PAQ Questionnaire
- Labels

The file folder for the relative of the factory worker/ relative of the spouse will contain the following:

- Participant Info sheet
- Consent Form
- Clinic Questionnaire
- Diet/ PAQ Questionnaire
- Reimbursement form
- Labels

This file folder will then be handed over to the team leader at the end of the clinic procedures (Fig.2 Clinic Operations) who will then check for missing/incomplete data. If

everything is complete, this is to be piled in the box pending for data entry. The empty file folders will then be use for the next batch of subjects. Once the questionnaires related to a particular subject(questionnaires of the factory worker, spouse and relative of factory and spouse) has been entered, this will be put into an envelope and filed in an almirah(?).

Scanned Data : Create a folder c:\indianmigrants\scanned_data in your PC. All scanned data like relative identification proof, other documents etc. are to be filed in this folder.

Appendices

Information sheets

PARTICIPANT INFORMATION SHEET

Information for consent of participants: Version dated 28/03/2005

Study title: Rural-urban migration: effects on obesity and diabetes in Indians.

Purpose of the study

Researchers here at the ……Medical College, …… (city name), the All India Institute of Medical Sciences, New Delhi, and the University of Bristol, UK, are interested in understanding how migration from rural to urban areas affects a person's chances of getting obesity, diabetes and heart disease. The study is being carried out in factories across four cities in India. Employees of these factories and their spouses will be examined together with one of their non-migrant brother or sister (if unavailable, then cousin or friend). Differences in life-style, risk factors and presence of obesity-diabetes will be compared between pairs of rural- and urban-dwelling relatives. These comparisons will allow us to understand the health effects of migration, thus helping to prevent these diseases in the future and plan better health services. To those participating in the study, this will provide an opportunity to gain important information about their own health status and take early action, if required.

Questions and concerns

You are being invited to participate in this medical research study. Kindly read this information sheet carefully. If you are not clear about anything or there is any uncertainty, then you are free to ask any questions when you meet the study staff. Sign the consent letter only when you are able to understand the nature of this study fully along with your rights as a participant. You are free to discuss this with anybody whose consultation is important to you.

Voluntary participation

It is entirely your decision to participate in the study. If you want to discontinue at any point of time, you are free to leave this study without stating any reason. Your medical care or employment will not be affected by your decision.

What does it mean to participate?

Participation in this study involves attending a clinic where you will have to undergo a short clinic examination. You will be asked questions about your health, habits and the various places you have lived in during your lifetime; have body measurements and blood pressure taken; and a small sample of your blood drawn. Your answers are confidential and will be used only for the study.

You will be asked about your:

- Household circumstances and the places where you have lived in during your lifetime
- Lifestyle and habits, especially your diet and physical activity
- Health and medical problems

In addition to this, ONLY if you work in the factory where the study is being conducted or if you are a spouse of someone who does, you will be asked to:

- Provide some basic information about your brothers and sisters (if unavailable, then cousins or friends) and where they live, so that suitable relatives can be invited to participate in the study

Medical examination will include:

- Measurement of height, weight, waist and hip circumference, and fat under the skinfolds
- Blood pressure

You will be required to give a blood sample

- You will be asked to fast overnight before the visit in which you give your blood samples. During the visit we will ask you to donate a small sample of your blood. Trained personnel will draw the blood. The supplies used for drawing blood will be safe and sterile and used only once and the supplies will be destroyed after use. The blood you give will be used for research purposes only.
- Any blood that is left over after the test will be stored and may be used for further laboratory tests for medical research
- Future research using the sample you give may include genetic research aimed at understanding genetic influences on diseases but the results of these investigations are unlikely to have any implications for you personally
- You will be given results such as blood sugar and lipid levels. If any abnormality is found we will refer you to the local medical college participating in the study.

Follow up in the future

- The present research does not require the research team to see you again. However, important information can only be gained by linking your current health and life style to what happens to you in the future. Therefore, we would like to invite you to continue to participate in the future if you wish.

Benefits from the study

You will get a medical examination by an experienced team, including doctors, and counseling will be given to you based on the results of the medical examination and blood levels. You will be given your blood results.

By participating in this study you will help researchers gain a clearer understanding of how migration effects the risk of diseases such as diabetes and heart disease. Your

participation will also help them understand how lifestyle, physical activity and dietary habits affect your health.

Risks of participating in the study
We do not expect that you will incur any risks by participating in this study. Blood drawing may cause a small amount of discomfort when the needle is passed into the vein, but does not cause long-term pain. After blood is taken sometimes there can be a small bruise or soreness at the site.

Financial costs
You will not incur any costs as a result of your participation in this study. Your travel fare, food and accommodation expenses, and loss of daily wages will be reimbursed. Refreshments will also be provided when you come to the clinic.

Confidentiality
If you decide to take part in the study, all details provided by you and your relative/friend will be kept confidential and it will only be made available to investigators related to this study. Information will be stored in password-protected computers in the participating study centres in India and Bristol, and analysed along with information collected for the Sentinel Surveillance Project. The results will be published in research magazines and reports. However, the names and details of the study subjects will not be disclosed and you will not be recognisable from them.

Funding & Coordinating agency
The funds for this study are being provided by the Wellcome Trust, a major UK based research charity. The overall coordination will be by the investigators from the Centre for Chronic Disease Control, New Delhi, and the Department of Social Medicine, University of Bristol, UK. The study in your centre is being carried out by …….. Medical College.

Ethical Review
The study proposal has been approved by the Wellcome Trust Health Consequences of Population Change panel, and the ethics committees of the All India Institute of Medical Sciences and the ……..……...Medical College.

Contact for further information
If you require any further information or need to clarify some issue, you can contact any of our study team members at …….

What your signature means
Your signature on the next page means that you understand the information given to you about the study. If you sign the form it means that you agree to join the study. You will be provided a copy of this patient information sheet to keep with your records.

Consent Form

Version dated 28/03/2005

Study Title: Rural- urban migration: effects on obesity and diabetes in Indians.

Participant: (apply label below)

Shri/Smt/Kum (First & Last Name)

Address (Lane, Town, State, Pin Code)

- I am free to participate or not to participate in this study.
- I have been given the opportunity to ask questions and reply was given for all the questions to my satisfaction.
- I have been informed by the investigators about the process including the nature, objective and known and likely inconveniences related to this study and I have understood them.
- My medical data are strictly confidential and I only authorise the persons, involved in the research, identified by the sponsor or health authorities to consult about the same.
- By signing this form, I give my free and informed consent to take part in this study as outlined in the information sheet and this consent form. Specifically, I agree to being interviewed, examined and having blood drawn. I also agree to my information, including results of blood tests, to be used in research.
- I give permission for any blood that is left over after the tests to be stored and used for further laboratory tests for medical research
- I understand that future research using the sample I give may include genetic research aimed at understanding genetic influences on diseases but the results of these investigations are unlikely to have any implications for you personally
- I have been given a copy of the information sheet and consent form to keep. By signing this form I have not given up my legal rights.

Printed name of the Participant_____

Signature of the
Participant_____Date_____

Printed name of the Investigator_____

Signature of the
Investigator_____Date_____

LETTER TO THE INDEX PERSON

Version dated 28/02/2005

Dear (Name of index person)

The accompanying information sheet explains to you about this medical research study.

If you are willing to participate, we would like you to:

- Answer some questions about your family and friends, which will allow us to establish whether you have a relative/friend that meets the requirements of the study.
- If so, we would like to invite that relative/friend to participate in the study with your permission and support.
- If your relative/friend agrees to participate, we will expect him to attend a clinic. The clinic will normally be held at the factory to which he/she will have to travel to attend.
- As explained in the information sheet, you and your relative/friend will not incur any costs as a result of participation in this study. We will reimburse any expenses that you incur in contacting your relative on our behalf. We will also reimburse your relative's travel fare, food and accommodation expenses, and loss of daily wage, if appropriate. If you/your relative prefer we can make accommodation arrangements on your behalf. Alternatively, if you decide to host your relative, expenses towards food and accommodation will be paid to you.

At the clinic:

- Both you and your relative will undergo the same medical examination. The details of the examination are described in the information sheet.
- We would prefer you and your relative/friend to come to the clinic together (and this may suit you too). However, this is not compulsory and you are free to come at separate times.
- Since this study involves comparisons of pairs of relatives, we would only be able to use your information for research if we also have the same information on your relative. Therefore we request you to make arrangements to come to the clinic ONLY when you are certain that your invited relative/friend is planning to attend the clinic as well.
- If you wish to attend the clinic, you can come anytime during the opening hours (see below). Although it is not necessary, we would appreciate if you could let us know beforehand when you plan to come so that we can make arrangements for your arrival.
- When you come to the clinic, please remember to bring with you any doctor-prescribed medications that you may be taking on a regular basis

- **Remember that you have to fast overnight** before the clinic visit, as otherwise the blood tests will not provide useful information. Overnight fasting implies no food or drink except after midnight. If your clinic appointment is in the afternoon, you may take an early breakfast but no food or drink (except water) after this time.

On basis of this assessment and the reports of the blood tests (which will also be sent to you), effective medical advice will be given to you. For any abnormality, you will be seen and counseled by the doctor, and if required, you will be referred to the affiliated medical college. This will provide an opportunity for you and your relative to become aware of your present health status and will also help you to avoid some of these serious health problems in future. In addition to health benefits to yourselves, you and your relatives will help the researchers immensely in gaining a clearer understanding of how migration has an effect on diseases and how they could be prevented. We will forever be grateful to you for making it possible for us to carry out this research.

Clinic venue and opening hours:

Telephone number for queries and to book a clinic appointment:

LETTER TO THE RELATIVES

Version dated 28/02/2005

Dear (Name of the relative)

This is a medical research study between _____ Medical College, _____ (city name), All India Institute Medical Sciences, New Delhi, and the University of Bristol, UK. The accompanying information sheet provides explanation about the study.

We want you to take part in a health and blood pressure check up, and also blood tests for sugar and fat, which can inform you about the state of your heart health and future risk of diabetes and heart disease. All these tests will be offered to you free of charge, and depending on the report, free medical advice will be also be provided. Your relative/friend _____ (name of the index person) who is working (or is a spouse of someone working there) in _____ factory, _____ (name of the city) is already a part of the study and they have recommended your name. They have been invited to undergo the same medical examination and tests as you, and you can both come to the clinic together if you prefer.

This invitation will give you a good opportunity to become more aware about your health. The information may also help you avoid some serious health problems in future. For this purpose, the doctor and the team would like you to come to the clinic (see below for information), preferably with prior appointment. You will not have to incur any expenses as a result of your participation in the study. Your travel fare, accommodation and food, and loss of daily wages will be suitably reimbursed to you or your relative, depending on who bears the expenses. Alternatively, if you/your relative prefer we can make accommodation arrangements for you.

When you come for the clinic, please **remember** to do **three** things:

- **Fast overnight** before the clinic visit, as otherwise the blood tests will not provide useful information. Overnight fasting implies no food or drink except water after midnight. If your clinic appointment is in the afternoon, you may take an early breakfast but no food or drink (except water) after this time.
- Bring with you any doctor-prescribed medications that you may be taking on a regular basis
- Bring with you a **proof of identity/residence.** This proof will be required for reimbursement of expenses, which will be made on the day of the examination. This can be a ration card, voter's card, driving or other license, or letter from the village head. Along with the photocopy, please bring the original for verification purposes. We will keep the photocopy and return the original to you on the same day.

If you are coming from out of town, please remember to carry your medications and proof of identity with you when you leave home.

On basis of this assessment and the reports of the blood tests (which will also be sent to you), effective medical advice will be given to you. For any abnormality, you will be seen and counseled by the doctor, and if required, you will be referred to the affiliated medical college. In addition to health benefits to yourselves, you and your relatives will help the researchers immensely in gaining a clearer understanding of how migration has an effect on diseases and how they could be prevented. We will forever be grateful to you for making it possible for us to carry out this research.

Amount of reimbursement (if relevant): Up to Rs _____ only

Clinic venue and opening hours:

Postal address and telephone number for queries and to book a clinic appointment:

Please indicate IMMEDIATELY through the acknowledgement card if you wish to be a part of the study. If yes, also let us know through the acknowledgement card your preference for:

- Month of visit (and actual day if you know)
- Venue i.e. factory clinic or a local camp near you (this may be possible only under special circumstances)
- Travel arrangements (self or require the team to arrange for you).

Looking forward to seeing you

Thanking you

Fieldworker Booklet

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STATE/UNION TERRITORY NAMES

State code	State name	Sub-district name
1	Jammu & Kashmir	Tahsil
2	Himachal Pradesh	Tahsil/Sub-Tahsil
3	Punjab	Tahsil
4	Chandigarh *	Tahsil
5	Uttaranchal	Tahsil
6	Haryana	Tahsil
7	Delhi *	Tahsil
8	Rajasthan	Tahsil
9	Uttar Pradesh	Tahsil
10	Bihar	C.D.Block
11	Sikkim	Sub-Division
12	Arunachal Pradesh	Circle
13	Nagaland	Circle
14	Manipur	Sub-Division
15	Mizoram	R.D.Block
16	Tripura	C.D.Block
17	Meghalaya	C.D.Block
18	Assam	Circle
19	West Bengal	C.D.Block
20	Jharkhand	C.D.Block
21	Orissa	Police Station
22	Chhatisgarh	Tahsil
23	Madhya Pradesh	Tahsil
24	Gujarat	Taluk
25	Daman & Diu *	Taluk
26	Dadra & Nagar Haveli *	Taluk
27	Maharashtra	Tahsil
28	Andhra Pradesh	Mandal
29	Karnataka	Taluk
30	Goa	Taluk
31	Lakshadweep *	Sub-Division
32	Kerala	Taluk
33	Tamil Nadu	Taluk
34	Pondicherry *	Commune Panchayat
35	Andaman & Nicobar Islands *	Tahsil

LIST OF MILLION PLUS CITIES

Urban Agglomerations/Cities having population of more than one million in 2001

Rank in 2001	Urban Agglomeration/City (1,000,000 + population)	Civic Status
1	Greater Mumbai	UA
2	Kolkata	UA
3	Delhi	UA
4	Chennai	UA
5	Bangalore	UA
6	Hyderabad	UA
7	Ahmadabad	UA
8	Pune	UA
9	Surat	UA
10	Kanpur	UA
11	Jaipur	M.Corp.
12	Lucknow	UA
13	Nagpur	UA
14	Patna	UA
15	Indore	UA
16	Vadodara	UA
17	Bhopal	UA
18	Coimbatore	UA
19	Ludhiana	M.Corp.
20	Kochi	UA
21	Visakhapatnam	UA
22	Agra	UA
23	Varanasi	UA
24	Madurai	UA
25	Meerut	UA
26	Nashik	UA

27	Jabalpur	UA
28	Jamshedpur	UA
29	Asansol	UA
30	Dhanbad	UA
31	Faridabad	M.Corp.
32	Allahabad	UA
33	Amritsar	UA
34	Vijayawada	UA
35	Rajkot	UA
	TOTAL	

VILLAGE FLOW CHART

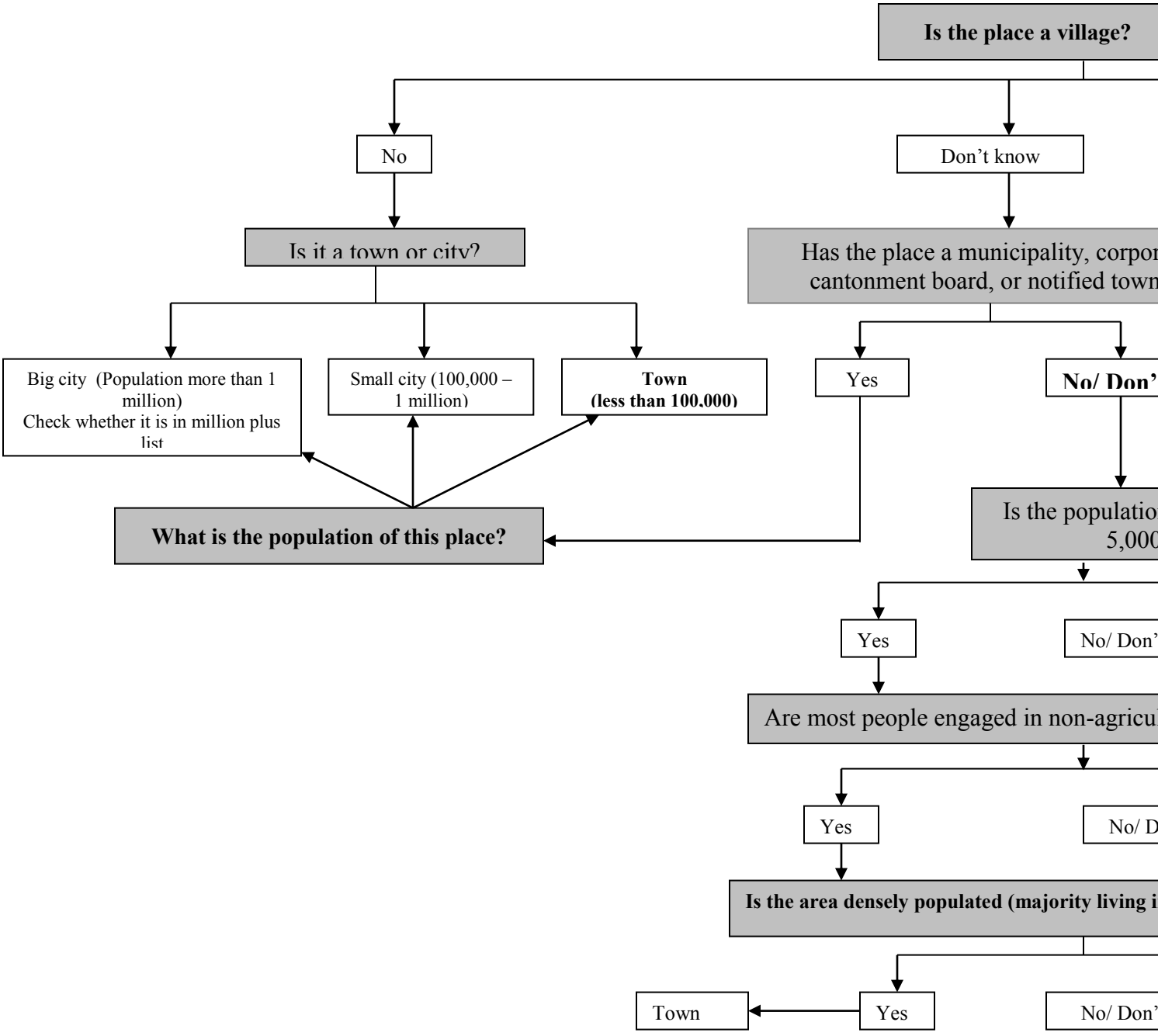

Table of occupational classification in IMS

Code number	Name	Activity	Training	Education	
1	At home doing housework	NA	NA	NA	Any member of h
2	Unemployed, not seeking work	NA	NA	NA	Student, training
3	Unemployed, seeking work	NA	NA	NA	Unemployed
4	Unskilled manual	Unskilled	None	None	- Landless - unskilled - Servant, - Watchma - Coolly, - Sweeper/ - Hawkers - Packers, l - delivery b - Garbage c - Car clean
5	Semi-skilled manual	Semi-skilled, manual	Some training	None	- Marginal - Petty shop - Peon - Rickshaw - Barber - Cobbler - Welder/fi - Fisherma - Sweet ma - Butcher - Farmer/ga - Semi-skil
6	Skilled manual	Highly skilled, manual activity	Long training	None or little	- Machine - Painters/P - Carpenter - Mason, - Mechanic - driver, . - Sculptors - Spinners/ - Tailors - Blacksmi - Street arti - Hunters/t - Poultry fa - Fire-fight

					- Army jaw
7	Skilled non-manual	Highly skilled, non-manual activity	Long training	Some education (read, write, arithmetic) will often be required	- Small bus - Farm own - big Store - Clerk/typ - Reception - Ticket co - Playhome - Electrical - Telephon - Post mast - Station M - Alternativ - Musician - Midwives - X-ray Tec - Postman
8	Semi-professional	Lower grade professional	Lower grade professional training	High school or university education	- Medium b - Teachers/ - Personnel - Inspectors etc.) - Maintena - Nurses/Ph - Accounta - Secretary/ - Diploma - Musician
9	Professional	Higher grade professional	Higher grade professional training	Generally but not necessarily university education	- Doctors (- Lawyers/ - Engineers - Universit - Class I IA - Senior ad - Bank Ma - Newspap - Musician - Big busin - Pilots/Na

Advertising material

Training programme
Schedule
Invitations
Materials
Gifts

Folder contents
Checklist
Questionnaires
Results
Protocol for medical consultation
Phase 1: Information campaign; media, meetings
Phase 2: RIS
Phase 3: Clinical

Daily activities
Calibrate equipment
Arrange refreshments
Paperwork

Calibration chart
Daily calibrations
Stadiometer against a meter rule
Weighing machine against a standard weight

3-monthly
Stadiometer against a meter rule
Weighing machine against a full set of known weights
6-monthly
Team reliability

What to give for refreshment