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Indira Gandhi National Open University
School of Social Sciences

BANE-154
DISSERTATION

DISSERTATION
(BANE-154)

MANUAL

School of Social Sciences
Indira Gandhi National Open University
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FIELD WORK MANUAL

Contents

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COURSE INTRODUCTION

The Bachelor of Sciences (Honours) in Anthropology (BSCANH) Programme comprises of fourteen compulsory courses and four discipline-specific courses out of a choice of six. BANE 154 Dissertation is an optional course in the sixth semester. It is a six-credit course that comprises compulsory fieldwork. For every student of anthropology, fieldwork is an integral component of initiation into the discipline. Fieldwork is an essential and important part of the study and fulfils the concept that anthropology is a field science.

This manual would guide, help and walk you through the process of initiating the learner into the realm of fieldwork. The course begins with the identification of a topic and ends with the submission of a well-structured dissertation of about twenty thousand words (excluding bibliographic references).

Course Outcome

The learner would be able to:

- select a research topic
- review relevant literature
- write a synopsis
- understand the nuances of submitting the synopsis to the Course Coordinator
- conduct fieldwork and collect data once the synopsis is approved by the Course Coordinator
- analyse and interpret the data with reference to the aims and objectives of the study
- present the work in an extended and coherent manner via the dissertation.

In the BSCANH Programme, through various courses both compulsory and optional, we have tried to provide you with adequate knowledge and information about the discipline of anthropology. Learning theory alone is not enough to understand the subject concern of Anthropology, thus, for every theory course, we have provided you with a practical component. Through these practical components, you have learned to prepare a synopsis, how to use theory in your fieldwork, which method, tools, and techniques you can use for your work, and how to analyse your data. In this course on dissertation, you would get the opportunity to use all the skills that you have been honing through your courses. It is essential that learners pursuing study in anthropology visit different communities, institutions and organisations and interact with people. The learners are thus, encouraged through the course on (BANE 154) to visit field in a variety of socio-cultural contexts to gain firsthand knowledge about the situation and environment and make an in-depth study on any one of the areas or issues associated with the lives of people. In order to make your task of conducting an empirical study an easy one, we have prepared this fieldwork manual which will assist you in various stages of your research.

The fieldwork dissertation should be planned and carried out **independently by the learner**, (data collection like blood sample or any other anthropometric measurements, interview, case studies, life histories, etc.,) are the sole responsibility of the researcher.

The learner with the help of a supervisor and guidelines specified in the fieldwork manual are to prepare for the data collection. The learner is **not to engage** any other professional/research assistant in the field for data collection. Based on the fieldwork, the learner is expected to submit a dissertation for evaluation. We are categorically sure that you would enjoy doing the fieldwork and realise the nuances of the subject. Fieldwork can take place in a variety of socio-cultural contexts but must be relevant to the subject matter of the anthropology discipline. What is expected of you is to decide on any anthropological issue you would like to undertake, review the related literature in detail and understand and analyse it. Learner can freely choose the location and specific theme for their fieldwork but their choice must be approved by one of the teachers and academic counselor. The learner is however, cautioned to work on a simple topic, as it is a learning phase and pay more attention as to how the anthropological tools and techniques can be utilised in the field. The basic idea is that the learner is able to comprehend what a field is and how a field is to be approached, armed with anthropological methods, tools and techniques. You should be able to prepare your own interview schedules, prepare notes for case studies or life histories. Apart from this, the choice of topic is only limited by research-ethical and safety conditions. Fieldwork dissertation would help you to apply your understanding of what is anthropology that you have learnt in the earlier courses. This would help you to develop your research expertise in anthropology and give you an insight as to how you can approach the issues that you are concerned and curious about. Through this manual we will guide you as to how you can go about completing a dissertation. The supervisor will not only acquaint you with the procedures and rules to be followed for completion of the project but also provide you with an understanding on how to go about it.

In this manual we have provided some guidelines which will enable you to conduct your fieldwork and prepare the dissertation. Your dissertation supervisor will provide you with further necessary guidance. There are five parts in this manual wherein we have compiled the practical components of the core courses from BANC 101 to BANC 110 to help you recapitulate and work on your synopsis and dissertation.

I am sure with the help of this manual along with the guidance of your supervisor you will be able to carry out your dissertation work systematically and to the full satisfaction of all concerned. In order to motivate you, for the cover design, we have used pictures that are from actual field work conducted by our research scholars. Hope it inspires you to conduct fieldwork on your own. Wish you all the best.

1.1 INTRODUCTION

Contents

LEARNING OBJECTIVES

The general objective of the fieldwork and dissertation (BANE 154) is to help the learner:

- to develop research skills;
- acquaint with the problems of humans of different cultures to conduct ethnographic fieldwork;
- to gain empirical knowledge required for preparing a research proposal;
- to practice what you have learnt in the core courses;
- to develop the ability to apply multi disciplinary concepts, tools and techniques to solve research problems through 'scientific method' of investigation; and
- to develop writing, presentation, communication and analytical skills.

Having studied the basic concepts, methods and theories of anthropology, it is appropriate that you get familiarised with conducting your own field research. The field work and preparation of the dissertation is going to be a new experience for most of you. What you have learnt in the basics of anthropology may help you, to a large extent, in understanding the social situation of our people and the need and importance of anthropological intervention. Surely you have chosen Anthropology with a purpose. Therefore, you must be eager to acquire some specialised knowledge on the subject. Most people learn by doing fieldwork and facing field situations. That is how exactly we are trying to help the learners of BSCANH. Although as a distance learner, you may face various limitations during the learning process, still we shall help you to acquire not only information and knowledge, but also skills in analysing humans' situations, their problems and the impact of various programmes being implemented. The students require both academic and mental preparedness to successfully and satisfactorily complete the fieldwork dissertation. We shall also try to equip you with skills for developing dissertation proposals for research, tools for data collection, report writing and making suggestions or recommendations.

The main purpose of this course is to sensitise you to the realities of social and human life. This dissertation provides an opportunity to the learners to apply the knowledge they have acquired in course of their study and to develop skills in the areas of various courses of this programme. Therefore, you will be choosing a topic of your interest for specialisation. This may be pertaining to the area in which you are already working or you may like to work on a different topic. You have grasped, we are sure, from the basics of anthropology that the areas and issues pertaining to the subject are very vast. Here we would like to concentrate on a particular theme or topic to specialise. For

those who want to pursue further higher qualifications, this may be their specialised research area and is of future career interest.

Within this framework, the specific objectives of BANE 154 are to enable a learner:

- to select a suitable research topic/title for the dissertation;
- to write research proposal pertaining to your own research interests;
- to identify and formulate research problems;
- to develop the research design for conducting empirical study;
- to identify the objectives of the study;
- to select the fieldwork area of the study;
- to develop the sampling framework;
- to identify and use appropriate research methodology
- establish rapport in field area;
- to collect primary and secondary data;
- to scrutinise the collected data;
- to train in the actual entry of data (manual or computer);
- tabulate data and to do statistical calculation;
- develop draft chapters;
- to scrutinise qualitative and quantitative analysis and interpretation of data of your study;
- to analyse the data by using classification and tabulation, following standard method and then using appropriate statistical technique;
- to finalise various chapters with the guidance of the supervisor;
- to write a good dissertation;
- to develop skills like proof reading, data articulation, and presentation of data;
- to successfully complete the submission of the dissertation.

1.1.1 WHAT IS FIELDWORK?

Before you plan to carry out your own research, you should be familiar with what is ethnography and fieldwork and what does an ethnographer do? In attempting to understand human diversity anthropologists have developed a particular method called ethnography; as a research strategy in academic circles, mainly within the discipline of anthropology. Ethnography and ethnographic fieldwork are the hallmark of anthropology. Ethnography, embedded in an anthropological tradition, is essentially the descriptive study of a particular cultural group or phenomenon. In ethnography, data collection is carried out primarily through fieldwork. It is fieldwork, more than

anything else that characterises the discipline of anthropology. Fieldwork advocates face to face experience with its subjects. It is the fieldwork that distinguishes anthropology from other social sciences. In fact for many anthropologists fieldwork is almost synonymous with ethnography.

Anthropologists also distinguish between *fieldwork*, which is a method of conducting qualitative research, initially in the discipline of anthropology, and *ethnography*, which is the writing up of that research. Ethnography is a systematic/scientific study of a particular cultural group or phenomenon, based upon extensive fieldwork in one or more selected locales. The aim of ethnography is to study societies in a holistic manner. Ethnography brings complex, personal, and thoughtful insights and meaning to the inner workings of social settings. Traditionally in anthropology ethnographies resulted in ethnographic monographs on cultures and communities.

Anthropologists gather data by doing fieldwork, going to the field. Wolcott (1995) defines fieldwork as a form of inquiry that requires a researcher to be engrossed personally in the ongoing social activities of some individual or group carrying out the research. Fieldwork involves living with the people they study, learning their language, asking them questions, surveying their environments and material possessions, and spending long periods of time observing their everyday behaviours and interactions in their natural settings. Fieldwork involves spending a lengthy period of time participating and observing another culture in order to generate anthropological knowledge. Spending long period of time in the field is considered the crucial aspect, because fieldwork allows the researcher to observe and examine all aspects of a cultural system, especially those that could not be addressed through laboratory or survey research alone. While conducting fieldwork they use a variety of specialised research methods, tools and techniques to increase the validity and trustworthiness of the findings. They gather information by watching and talking with people, and by reading available reports and records. Observation is a main tool in an ethnographer's toolbox, and ethnographers spend a good deal of their time in the field observing, either as nonparticipant or participant observers. In Participant observation anthropologists collect their firsthand data by involving themselves into the cultures to better understand the insider, or emic experience. In this way the fieldworker/ ethnographer not only becomes familiar with the spatial dimensions of the research setting, and its socio-cultural dynamics, but also how those dynamics may change at certain times of the day, week or year.

In the courses BANC-102 Block-4 and BANC-110 Block-2 we have discribed the technique for gathering empirical data on human societies/cultures through observation, interviews, schedules and questionnaires, etc. The techniques, methods and methodology emphasises on the significance of field work in anthropology. In fact, anthropology is referred to as a field science. It gives awareness on the differences and relationship between technique, method and methodology which are the backbone of research. Research design is essential before proceeding towards any research project. These blocks give an idea about significance of literature in any research pursuit. It gives the knowledge about the achievement of similar studies thereby helping the researcher to limit the scope of their inquiry providing them the structure of their topic along with cautioning to go beyond the scope of their quest. It is a continuous process and efforts should be made not to repeat the study already undertaken. Literature survey also helps to learn from the studies of predecessors who worked on related

topics and to improvise over them. This is one of the major benefits of literature review. You must have noticed that research design follows certain steps. Selection of the research problem has three main components: determining the core area of research, identifying the range of alternatives from which choices are made, and the context in which these choices are made, i.e., the factors that can influence the choices. I am sure after you have read through this unit on research design theory you can comprehend how in anthropology, facts, hypotheses, theory, and science are interrelated. Do you remember you were exposed to the idea of theory as basic building block of science? Read BANC-108 about how hypotheses are built up from theories and how the parameters that would reveal information form the integral part of research? Research design as the name indicates means designing a strategy of conducting the research satisfying what, how, where, why and all the queries pertaining to the field chosen. A well conceived research design makes the job of the researcher an easy one. It gives a clear picture of the research process facilitating repeatability of the study by others to validate the results obtained. This is only possible if the research design is planned well, keeping all the aspects into consideration. While doing so one must be very clear of the objective of the research and then choosing the right methods and techniques not only for collecting but also for analysing the data to achieve the objectives. A research design also helps to manage the time and cost budgeting which is important considering the time constraints and limited financial resources.

Tools and techniques of primary data collection and sources of collecting the same hold a pivotal position in anthropology and that's what you learnt in the tools and techniques of data collection. In both direct and indirect observation and participant and non-participant observation for primary data collection were emphasised. Observation is one of the oldest and most commonly used methods for data collection.

Secondary data refers to already existing data which has been collected and analysed by somebody else. The unit on secondary data reflects that the most important problem that the social scientists of the day face concerns the collection of relevant and reliable data. The scholars belonging to various social sciences have developed their own technique of data collection, depending upon the nature of their discipline. Such data holds extreme importance as secondary data which could be in the form of census, gazetteers etc. Apart from collecting data using various tools and techniques, the fieldworker should maintain a field dairy which will be quite useful at the time of analysing data.

The section 1.3.1 (pg. 37) on biological methods elucidates that the importance and selection of the biological method is dependent on the objective of study. The significance of anthropometry, pedigree analysis, serogenetics and somatometry are well dealt with. Archaeology is one of the important branches of anthropology which unearths the human past with the evidences from material and culture. It is not an easy task to unravel the bygone era therefore scientific techniques are employed to reach the conclusions. It involves everything, from locating the archaeological site, then collecting the relic of that time, organising it to specific cultural periods by choosing from different methods, conserving and preserving them and finally interpreting them.

The analysis and interpretation of data is the key to good research work. In BANC-110, Block 3 the unit on statistical analysis exhibited the application of statistical techniques in research to appreciate the need of statistical techniques and which technique to employ best for any particular problem. It is not just deciding upon the accurate technique but equal emphasis has to be given to interpreting the data and its result. Statistical techniques play a very important role in every step. The statistical techniques

can be used to help in collecting, processing and interpreting quantitative data. The fieldwork and dissertation is essential and mandatory in the study of anthropology. Now when you will work on the dissertation remember and implement what you have learnt in course on Anthropology and Methods of Research.

1.1.2 DISSERTATION WORK

The fieldwork dissertation is a piece of research that shows your capability to carry out the research process in an independent and thorough way. It brings together all the research skills that you have developed over the past one or two years while studying anthropology course and enables you to study a topic of your choice in more depth. Dissertation work leads you to further research. Research means seeking knowledge. More specifically, research means systematic effort to gain new knowledge. It is defined as a methodical and systematic search for relevant information on an explicit topic. Dissertation work is entirely dependent on you. It is you who holds the responsibility right from the inception to writing the dissertation. You can select a topic which can either be from biological anthropology, social anthropology or archeological anthropology or having all the three components of the sub disciplines. The mentor will definitely provide guidance, but the work would be as per your perception. Dissertation work in anthropology plays a very significant role as the fieldwork conducted gives you an insight to any anthropologically related issue practically in a wider spectrum. It provides you a platform in professional career too because of your first hand involvement and observation. Of foremost importance is the nature of research. You have to decide what you want to work on and then formulate the hypotheses depending upon the nature of research.

The fieldwork dissertation is planned and carried out independently which is learnt by practice and experience. This is not possible without meaningful research. Field research is an important foundation of providing guidelines for solving issues. There are some major steps involved in field research. The most notable step is defining the research that is to be undertaken. It generally follows a sequential pattern - the problem is stated in a general way; the doubts are resolved; lot of thinking in formulation of the problem takes place so that it may be a rational one in terms of the available data and resources; it should be analytically meaningful. This will enable in formulating a well defined research problem that will be meaningful from an operational point of view of solving the problem itself. Research design is yet another significant step. Number of research designs are available but before you start collecting the data and analyse them, you must be sure which design is the most appropriate for your field research. Due importance should be given to the universe of study, what do you aim to achieve from the research work and the sampling frame in designing of the field research. How do you develop a field research plan? The objectives or the purpose of research should be clearly stated, problem to be studied should be clearly focused upon so the what one will achieve from solving the problem is unambiguous; each major concept which you want to study should be defined in operational terms with respect to the research work; research plan should indicate the method to be used in solving the problem; complete details of the technique to be adopted should be mentioned; clear description of the population including indication of how sample is to be identified; statistical methods to be used for processing data must also be stated in the research plan.

Research work is an enabling method, which helps you to acquire fresh information in an organised way regarding a topic. Usually a topic is chosen on which not adequate

studies have been done in the past. It is also possible that you choose a topic on which studies were done earlier, but with different objectives. One can choose any specific topic and study any particular aspect pertaining to that topic. For example, lots of studies were done on Integrated Tribal Development Agency (ITDA). Yet you can choose the same ITDA and concentrate on a specific area such as: comparative study between states, between tribes, between zones, health and education issues, and rights issues and so on.

The outcome of the fieldwork will be in the form of a dissertation. The dissertation will have an introduction which will clarify the topic and the issue being investigated. It will also briefly describe various studies conducted earlier by individuals and/or organisation. Based on the review of such literature, the dissertation will specify what new area is proposed to be studied or explored. The research design or the chapter on methodology will discuss step by step how the study was carried out and the data complied. The dissertation will conclude with a chapter which will provide major findings and suggestions or recommendation for implementation and/or for further investigation.

1.1.3 YOU AND YOUR SUPERVISOR

Selection of Supervisor/Project Mentor

Your dissertation work will be guided by a mentor duly recognised by the Indira Gandhi National Open University. Learners can choose a mentor, who is well versed from the discipline of anthropology, i.e., either from physical/ social/ archaeology depending upon the topic chosen. All Academic Counselors of the MAAN/BSCANH Programme at the Study Centres are recognised as Academic Supervisors for guiding your project work. Apart from this a learner can also select a supervisor of his/her own choice from any University/College. The eligibility of a person to become supervisor/guide is as follow:

A person having doctoral degree in discipline of Anthropology and should be working in the University/College.

Or

A person having Masters Degree/M.Phil. in Anthropology with two years experience should be working in the University/College.

Or

A person related to the discipline holding a position in any University or Institute.

If you are taking an Academic Supervisor of your choice (from University/College teachers), send a brief bio-data of him/her along with the proposal to the Programme Coordinator at New Delhi for approval. The names of the supervisors will be approved by the IGNOU faculty of Anthropology before the study is undertaken. The supervisor will approve your project proposal, guide you all through the preparation of your dissertation and certify the work you have done.

Once a supervisor has been appointed, you should follow a series of stages in the supervision process as you proceed from refining your proposed research to the presentation of your finished dissertation. It is important that you take responsibility for

maintaining the momentum throughout your candidature, and that you are well prepared for your consultation with your supervisor at each stage. You should discuss with your supervisor pre-determined deadlines for the completion of your project work. We strongly advise that you map out, from the start, a schedule of meetings or consultations with your supervisor at various stages of dissertation work. This will provide you with a series of deadlines to work to and goals to achieve, and will make clear the expectations that you and your supervisor have of one another.

It is expected to have at least four meetings with the allocated supervisor. Although individual instances will vary, however it is expected to have minimum of four substantive consultations of approximately 30 minutes with the supervisor. It is the responsibility of the researcher to arrange these before the supervision period ends. It is advisable to make arrangements for subsequent contact at the end of each meeting. Distance learning students, on the other hand, may never meet their dissertation supervisor face-to-face and, therefore, need to establish an alternative pattern of communication. Options include you can telephone, email or fax, etc.

The Learner's Role

The learners must ensure that dissertation supervisors are kept fully informed on progress and difficulties, and are 'interviewed' with prepared questions at supervisory meetings. The chapter drafts should be submitted in advance of meetings giving sufficient time to allow for comment and discussion before proceeding to the next stage. The responsibility is on the researcher to make sure that the meetings with the supervisor are arranged and that learner; attend at the times agreed upon with mutual consultation. The learners will not be 'chased' by supervisors. The responsibilities of the learner include:

- Discuss with the supervisor the type of guidance and comments that they find helpful.
- Taking the initiative in arranging consultations, raising questions on problems or difficulties encountered.
- Delivering type-written drafts several days before a discussion.
- Keeping appointments (or informing the supervisor where this is not possible).

Maintaining a schedule of work as agreed to with the supervisor. The supervisor will almost certainly be supervising a variety of other projects; therefore, the researcher should not assume that he/ she can immediately recall the last discussion he/she had about a particular topic. Whenever you meet the supervisor and discuss with him, take notes and these will help you in your work. Such record on previous meetings will also help the supervisor to recapitulate earlier discussion and suggestions to proceed further. Meeting with supervisors always need to be prearranged. Never expect on-the-spot supervisions. There will also be periods when the supervisor is not available, either because he/she is heavily committed with the duties such as examining, or on leave for work or holiday reasons. It has to be ensured by the students that they should keep their supervisor updated of their progrress. Supervisors cannot judge how your work is going if the researcher just hands over a sub-section that he/she has written up. A draft of the contents has to be annexed so that it is quite clear what follows on from what. A note to show if and how the section in question is incomplete needs to be

added, to clarify. It may not be possible for the supervisor to read entire dissertation as soon as it is prepared. It would be a good idea, therefore, to discuss this and establish which sections he/she wishes to see. Also, supervisors are not to be expected to proof read or to correct spelling/grammer. Learners are advised to arrange for such services themselves if needed.

Even after the supervisor has read the entire dissertation and the suggested changes have been carried, this is no guarantee that it is of a pass standard; after all, the work is of the researcher and its quality is dependent on his/her output. To a large extent, then, the dissertation has to be a self- managed process. The role of the researcher is to organise the research program as a whole, taking advice from the supervisor and taking the initiative in discussing problems/difficulties. The supervisor's role is to give advice and help about the nature and standard of the work, and direct the student to useful literature and appropriate methodology. But remember, the ultimate responsibility lies with the researcher. Do not expect the supervisor to read drafts and re-drafts of every piece of work, and above all, do not embarrass him/her in the latter stages by asking whether you will be successful, not the least because he/she cannot tell you, or do not know (if you are border line). When submitted, the dissertation is referred to, external examiner who will make an independent judgment of your work in its entirety. It is important that you submit whole chapters for feedback in good time for meetings with the supervisor, accompanied each time by an updated outline, a running bibliography and any necessary appendices. Because you have revised your chapter do not discard your earlier draft immediately. You should keep all your data, field dairy, rough drafts, notes taken during discussions with supervisor, etc. till the end of the dissertation. The supervisor cannot deal with smaller sections since it is impossible to see how these relate to the whole. You should take whole chapter if not all the chapters to him for advice.

The role of the supervisor is to:

- Give guidance about the nature of the research and dissertation/research project report.
- Give guidance on the standard of work expected, and on how to plan and manage your time and the program of research involved.
- Advice about review of relevant literature.
- Give guidance on research techniques and on necessary reading.
- Advice about study design, methods and developing the research question.
- Oversee the writing of an outline and the selection and submission of a title.
- Give guidance on the planning of empirical work and about how to collect data in the field.
- Give letters of introduction/authorisation to enable you to make enquiry and investigations at different sources (offices, libraries, etc.).
- Giving practical advice to help in the implementation of your research proposal.
- Respond to first drafts of chapters.

- Agree completion dates for successive stages of the work, requesting draft chapters as appropriate and returning written material with constructive criticism on the broad shape and structure of the work (but not on its detailed content).

Provide advice and guidance to help improve the quality of the work. Please remember though, that dissertation preparation for a higher degree is under taken within the general principle that the dissertation must be the learner's own work. To reiterate, it is not your supervisor's job to write it for you!

In sum, the supervisor will guide the researcher towards the production of the dissertation by discussing each part of the process. He/she may advise on relevant areas of literature, help to develop thoughts on the topic, give guidance on the development of chapters and on the conventions of dissertation writing. The supervisor will not act as a proof-reader. They are obliged to read the whole of the final draft submission. In addition, he/she will approve and recommend the proposal to the Faculty Committee as well as certify and recommend the dissertation for evaluation.

The supervisor will be paid a token remuneration of (Rs. 500/-) only for each project. He/she can claim project guidance fee using a proforma as (enclosed), after the submission of the dissertation of the learners.

1.2 WRITING A SYNOPSIS

Contents

LEARNING OBJECTIVES

After reading this manual the learner would be able to comprehend:

- how to prepare a synopsis; and
- the elements that have to be taken into account while writing a synopsis.

1.2.0 INTRODUCTION

Fieldwork is the hallmark of anthropology. It can be said to have formed the foundation of the discipline. Famous anthropologist, Margaret Mead notes: "We still have no way to make an anthropologist except by sending him into the field: this contact with living material is our distinguishing mark" (Mead 1964: 5).

Fieldwork is the most important method by which anthropologists gather data to answer their research questions. While interacting on a daily basis with a group of people in the community, anthropologists document their observations and perceptions and adjust the focus of their research as needed. They typically spend a few months to a few years living among the people they are studying. When anthropologists conduct fieldwork, they gather data.

An important tool for gathering anthropological data is ethnography—the in-depth study of everyday practices and lives of a people. Ethnography produces a detailed description of the studied group at a particular time and location, also known as a "thick description", a term coined by anthropologist Clifford Geertz in his 1973 book *The Inter-pretation of Cultures* to describe this type of research and writing. A thick description explains not only the behaviour or cultural event in question but also the context in which it occurs and anthropological interpretations of it. Such descriptions help readers better understand the internal logic of why people in a culture behave as they do and why the behaviours are meaningful to them. This is important because understanding the attitudes, perspectives, and motivations of cultural insiders is at the heart of anthropology (Nelson, K.; https://courses.lumenlearning.com/suny-culturalanthropology/chapter/fieldwork/).

The first step towards fieldwork is having the intent to conduct research. This intent gets manifested in the research synopsis. In the next section let's discuss how to prepare a research synopsis.

1.2.1 WRITING A SYNOPSIS

A synopsis may be defined as a brief outline or the framework that describes the research to be undertaken. In the synopsis one needs to discuss the topic that has been selected for the fieldwork from the following viewpoints:

a. Introduction

b. Selection criteria of the topic: Universe and unit of study

c. Relevance of the topic

d. Literature review

e. Aims and objectives

f. Hypothesis (if any) needs to be explained with justification

g. Pilot study

h. Methods, tools and techniques

i. Data compilation, analysis and writing a report

j. References

k. Appendix

a. Introduction

The first step in writing a synopsis is giving an introduction of the work that is to be undertaken. Like we have stated in the theory section, one cannot just barge into a space like an institution, village, corporate organisation, etc., and conduct a fieldwork or research. First, we need to have a detailed plan and understanding of every step of doing the fieldwork and that begins with the identification of a problem for research which needs to be discussed in the introduction section. In each of the units the learner must have realised how the topic is being introduced to the learner. Likewise, while writing a synopsis the first step is to introduce the type of work that the researcher intends to pursue.

b. Selection criteria of the topic: Universe and unit of study

Identifying a Research Problem

For doing fieldwork the first requirement is identifying a research problem or question. What is a research question? How do we identify a research question? What are the criteria or benchmarks that one needs to keep in mind while formulating a research question? These queries will be discussed in this section. Research question can be on any topic that is relevant, can be justified and related to human beings. For example, we can choose a research question like migration patterns of daily wage labourers to big cities. One must be able to define and conceptualise each item of the research problem. For example, we must first define the term daily wage labourers, in terms of the kind of work they do, the nature of their livelihood and also what is meant by migration. What we have read will be very helpful in this regard. In this research question, we first need to understand why we want to study the migration pattern, and why we are using the term pattern? Migration, as we

know, is a phenomena and it is happening since time immemorial. People have been moving from one place to another in search of new land, food and work. However, when we say migration pattern we would basically be looking at the migration trends-like long term migration or short term migration or seasonal migration, etc. Once a research problem is identified the next step for the researcher would be to look up at the work that has already been done in this field by other scholars. The identification of the research problem is closely associated with the interests of the researcher; whether he/she wants to do exploratory research, action research or a purely an analytical theoretical research.

Reflection

The choice of topic should preferably be based on a theme or problem associated with the subject of research. There are various sources for selection of topic but the most common, which may lead to an interest in the topic are:

- personal experience,
- something someone has said,
- something you have read,
- something you have studied,
- something you have not studied,
- your career aspirations.

Important events and trends often inspire a research topic.

Universe of study: A researcher before embarking on fieldwork first needs to identify a problem, based on which the researcher would describe the universe and the unit of study. Universe of study includes all the elements that would be a part of the study and it is basically decided when a research topic is being formulated. The universe can be a physical region, like a village or urban neighbourhood for example, or it can be a population like say cricket players; communities like teachers, doctors, diaspora studies, in recent times the internet as a community is also coming up in a big way like the facebook groups, twitter groups, etc., Research can also be conducted at multiple sites, like one can follow migrants on their journey, and so on. The choice of the universe is directly and logically connected to the nature of the problem. The universe in fact is the field to which we refer when we use the term fieldwork. For example if we select a topic that relates to the movement of human population from the place of birth to some other space like a nearby town, city or to some other state or country altogether, the universe of study in this case would be migration.

Unit of study: Now within the broader framework of migration what are we going to study? Whom are we going to study? Will it be a group of people coming to find work in a city from a village? What type of work they would be engaged in when they migrate? Which city are we going to study? These are some of the questions that would need to be taken into account when we decide the unit of study for the universe migration. There may be many more questions, one can think

of but here we are just naming a few to help the learners. Say for example we want to study the migration pattern of contract labourers so here the unit of study would be contract labourers and to make it more precise we would add the place also, for example from which part of the country the labourers are migrating and where they are going as contract labourers. Such detailed information makes up the unit of study. One also needs to take into account the type of study one is planning whether it would be qualitative or quantitative based on which the sample size in terms of the population that would be studied would be decided, like age group of the migrants to be studied, gender, etc.

c. Relevance of the topic

If we look into literatures, we will find that almost every topic one can think of has been explored and researched. Going back to our example of migration, we would find an endless amount of material on the topic. So, what do we research on? What remains for a researcher is to find the gaps and work on them. That would lead to looking at the problem from a different perspective. In relevance of selecting a topic a researcher has to detail the reasons why the topic is of importance and how it can lead to new avenues of research. This can only be achieved if one does literature review. In the next section we will discuss literature review.

d. Literature review

Once we select and identify a research problem for our study we need to do a background search in terms of what other research has been done in the same field this is known as a literature review. Literature review helps in understanding how the research problem has been looked at by other researchers and what are the gaps that are there. It basically strengthens our research work and facilitates in doing away with repetitions. In this section the researcher has to outline the different types of literature that would be consulted during the course of the research. Let's go back to our example of migration patterns of daily wage labourers to big cities. With this as our topic let's see what kind of literature we would need to review. First, we have to list out works on migration, herein we can look at different disciplines and see how migration has been perceived by them like the economist, sociologist, etc. Even the reports of the international organisations like International Labour Organisation, UN reports, etc. to see the issues and problems of migration and how migration is being perceived in the present times. Second, the anthropological works on migration would be the next stop for literature review. One also needs to carefully search if any of the anthropologists have worked on the universe that you have selected. This will help in not replicating someone else's work which is equivalent to reinventing the wheel again. We would also have to look at the patterns of migration, the reasons behind seasonal migration, etc. So, literature review underlines the work that has already been done and helps one to formulate questions from the gaps of other studies. As in the present world, everything and anything has been explored and the challenge of a researcher is to find gaps and explore those areas that need more attention and can be looked at from a different perspective. It also helps us in identifying a theoretical approach that we may use and also guide us in defining and understanding concepts.

e. Aims and objectives

In a synopsis one needs to define the aims and objectives of the research activities

that are to be done. The aims define why a research is being undertaken. The aims present the thematic and theoretical perspectives, objectives define those concepts and theories in a detailed manner. While deciding on a topic it generally begins with an area of interest that a researcher wants to focus upon, one tends to look for a problem or unexplored issue in that area or gaps in an already researched area, usually from a particular perspective or approach.

Aims

Aims in a research proposal broadly describe the desired outcomes from the research. They focus on long-term intended outcomes or the researcher's aspirations in reference to the research. Aims are not numbered in a research proposal.

Objectives

Objectives are basically defined to understand how the aims would be accomplished. While aims define the nature of the research in a broader sense, objectives are more focused and define how it can be done practically. Objectives are generally numbered in roman alphabets, so each one stands alone. Each objective must have a concrete method defined.

Both aims and objectives should be short and precise. While defining the aims one must have one or more objectives describing how that aim should be met. They must be interrelated, with realistic goals keeping in view the methods that would be employed in order to reach the scope of research. One must avoid something too broad and it should be to the point. Now try to think what could be the probable aims and objectives for the topic migration.

f. Hypothesis

While formulating the research design a researcher may formulate a hypothesis. A hypothesis is a tentative relation between the variables that we are looking at in the field. The hypothesis formulation though is not an essential criteria for qualitative research as it can be an exploratory research. Whether or not one formulates a hypothesis it is essential to describe the aims and objectives of why the research needs to be done.

g. Pilot study

A researcher may undertake a pilot study to test the interview schedule for fieldwork. During the pilot study based on the actual ground reality the researcher finds ample scope to rework on the interview schedule and refine it.

h. Fieldwork methodology

In this section the tools and techniques that are to be used in the field needs to be described. As we have learnt in our theory section there are many tools and based on the topic the researcher needs to select the tools and techniques that best suits the research. One needs to note here that all the tools and techniques need not be used. One needs to detail here how interviews are to be conducted like using an interview schedule (structured or unstructured) or an interview guide or if it is a

virtual project types of questionnaires, etc. The tools and techniques stated below is a recapitulation of Unit 12 and 13, BANC-102, from the theory section.

(i) Observation: Observation are of three types. a. Participant observation, b. Non-participant observation and c. Quasi-participant observation.

a) Participant observation owes its origin to Malinowski who participated in the activities of the community under study and tried to live as one amongst them. For a researcher to become a participant observer one of the basic criteria is to learn the local language or dialect. Learning the language of the people under study helps immensely in understanding the deeper structures, meanings and connotations during an interview. Many a times it has been felt by anthropologists that when an interpreter is used, the chance of the information getting diluted or misinterpreted is always there. In this regard Weidman 1970 had written that during her fieldwork in Burma the interpreter was more concerned with spreading her own religious ideologies rather than taking into account the information provided by the people during the interviews. While using an interpreter one needs to be cautious about the way the information is relayed by the interpreter. For a researcher to be engaged in participant observation the duration of the field study has to be for a considerable period of time. Else it becomes superfluous, as it is not quite possible to be a part of a group in a short period of time and understand the essence and inner most core.

b) In non- participant observation the researcher observes the activities of the community under study from a distance without getting directly involved. The researcher would be very much present in the filed but will not actively participate, they might just observe as a bystander in any event.

c) In most cases the observation conducted by researchers in the field is known as Quasi Participant Observation as many times it is not possible for the researcher to get directly involved in the field situation. For example, while studying the shaman in a village, a researcher might closely observe the rituals performed by the shaman yet he would not be able to chant the hymns that the shaman uses during the ritual. Neither would the shaman part with his secret rituals. Here though the researcher is directly observing yet it is not complete participation as he/she can't chant or perform the rituals.

(ii) Interview: There are many ways of conducting an interview and also there are many types of interviews, a. direct interview and b. indirect interview are two of the basic interview techniques. In direct interview, the researcher meets the informant and conducts a face to face interview. While in an indirect interview the researcher can either send the interview questions to the informant via mail/post, email or conduct a video, web or telephonic interview. During fieldwork as the researcher is present in the field, direct interview is the norm. Life history, case study and focus group discussions are the different types of interviews that a researcher uses based on the requirement of the problem identified.

Designing the tools for interview: In order to conduct an interview we need to have a systematic approach. Questions need to be formulated so that the researcher is able to acquire relevant information from the informants during an interview. Different types of interview schedule and guides are prepared as per the requirement of the research work.

For direct interview, either a structured interview schedule or unstructured interview guide is prepared by the researcher. A structured interview schedule has a fixed format of questions that the researcher uses while conducting an interview. The unstructured interview guide is used for taking interviews where a strict format is not followed and the interview can be free-flowing. While conducting interviews in the virtual space a questionnaire is used. A questionnaire has a fixed format with objective type questions which require the respondent to reply with either 'yes' or 'no'. Subjective type questions are not included in a questionnaire, though presently the trend is changing and many are also including the same. Lets discuss the interview tools in detail and see how they are prepared.

a) **Interview Guide**

As the name itself suggests an interview guide is prepared by the researcher as a pointer for them to ask questions. An interview guide may not follow a fixed format yet, while preparing an interview guide one has to take into consideration the following aspects: a. One must remember here that the research question can never be directly used as an interview question when one is in the field. For example, if our research question is migration, then one cannot simply ask an informant "why did you migrate?" or "what is migration?" The same question would need to be asked in a variety of ways. You may start by asking the informant about his/her native place. Since how long the person has been staying in this new space? What were the reasons that made him/her leave the native space etc. b. Validation of facts: While in a field situation one would realise that what one says doesn't mean that the same values are followed in real life. There are ideal situations and many a times during an interview an informant may speak of an ideal situation, understanding it to be the right answer. However, it has been seen that what is being espoused is not always practiced. Thus, an interview guide needs to have validating questions that is the same questions being put in different situations, giving different examples which might yield different responses from an informant. Thus, validating questions always needs to be part of an interview guide.

As a researcher one has to be sensitive and always try to ask questions in an interactive mode. At times a direct question might offend the informant. Most times an interview guide is used during an unstructured interview. A times when interviews takes place in informal situations and many a times impromptu cases like while having a general conversation a topic comes up that leads to an interview. Say a few of the informants are sharing a cup of tea in a tea stall and the conversation steers towards the researchers topic and an impromptu interview or a group discussion takes place. In such cases having a interview guide ready would be quite handy.

SAMPLE INTERVIEW GUIDE

1. What is your name?
2. How old are you?
3. For how many years have you been living in this town?
4. Please share with us the reasons for leaving your home town.
5. Do you like living in this town?
6. Tell us about some of the issues that you faced when you first came to this town.
7. Are you the only one who came here from your home town?
8. What motivated you to come here?
9. When did you come to this town?
10. Please tell us why you left your native place?
11. Do you plan to go back to your home town?
12. Suggest what would motivate you to go back to your home town?

SUGGESTIONS FOR HOW TO ASK QUESTIONS

- During an interview questions should be open-ended rather than closed-ended. For example, instead of asking "Why did you migrate?" ask "Please describe the reasons why you left your native place or hometown"
- It is advisable to ask a factual question before opinion questions. For example, ask, "Do you like your present living conditions?" before asking, "What do you think of your present living conditions?"
- During an interview there are times when the researcher would have to probe for answers or as a kind of encouragement for the responded to reply. These may include:
  - Would you please give me an example?
  - Please elaborate on that idea?
  - It would be helpful if you would explain that further?
  - I'm not sure I understand what you're saying.
  - Is there anything else you would like to add?

b) **Interview schedule:** Interview schedule is the format used by the researcher during an interview. An interview schedule can either be structured or unstructured. A structured interview schedule has a fixed format of questions that the researcher uses while conducting an interview which is mainly used for conducting surveys, or for gathering quantitative data. Census data is normally collected using fixed structured interview schedules. In most cases such quantitative data needs to be compiled, tabulated and analysed.

SAMPLE INTERVIEW SCHEDULE

TOPIC NAME

Place: Date:

General Information:

1. Name of the informant:
2. Age: 3. Gender: Male/Female/Others
4. Marital Status: Married/Unmarried/Divorced/Widow/Widower
5. Occupation: 6. Annual Income:
7. Educational Qualification:
8. Family details:
9. Relationship with head of the family:

Information on Migration:

10. For how many years have you been living in this town?
11. Please share the reasons for leaving your home town.
12. Do you like living in this town?
13. Tell us about some of the issues that you faced when you first came to this town.
14. Are you the only one who came here from your home town?
15. What motivated you to come here?
16. When did you come to this town?
17. Please tell us why you left your native place?
18. Do you plan to go back to your home town?
19. Suggest what would motivate you to go back to your home town?

c) **Questionnaire:** While conducting interviews where the researcher is not physically present, the researcher sends the document to the informant and the information is filled up by the informant, in such cases we use questionnaire. A questionnaire can be used in the virtual space too like creating a survey format that can be posted online on the social networking sites that allows the respondents to fill up the same online without having to take a print out. The basic difference between an interview schedule and a questionnaire is that the interview schedule is administered by the interviewer himself/herself in the field, and it is the researcher who fills up the information in the sheet, while for a questionnaire the researcher is directly not present with the informant when he/she fills up the answers. The sequence of questions is very important for a questionnaire. One begins with simple and forthright questions that can be easily answered followed by more difficult and reflective questions. Often one gives what are known as multiple choice questions where one has to choose

from several options. One also needs to place what are known as test questions. To assess the reliability of answers to vital questions, one may have to frame multiple questions to get at the same information. For a questionnaire to be administered the group has to be literate enough to fill up the forms, a drawback that is not there while administering an interview schedule.

SAMPLE QUESTIONNAIRE

TOPIC NAME

Place: Date:

General Information:

1. Name of the informant:
2. Age: 3. Gender: Male/Female/Others
4. Marital Status: Married/Unmarried/Divorced/Widow/Widower
5. Occupation: 6. Annual Income:
7. Educational Qualification:
8. Family details:
9. Relationship with head of the family:

Information on Migration:

10. For how many years have you been living in this town?
    .....
11. Please share the reasons for leaving your home town.
    .....
12. Do you like living in this town?
    .....
13. Tell us about some of the issues that you faced when you first came to this town.
    .....
14. Are you the only one who came here from your home town?
    .....
15. What motivated you to come here?
    .....
16. When did you come to this town?
    .....
17. Please tell us why you left your native place?
    .....

18. Do you plan to go back to your home town?

    .....

19. Suggest what would motivate you to go back to your home town?

    .....

(iii) Life History

Life history is used by anthropologists to reveal the extensive account of a person's life, whether written or narrated by the person, or by others, or by both (Langness 1965). Life history presents the characteristics which are unique to the individuals and distinguish them from others in the group (Young 1996: 26). It also at times might represent the characteristics of a group, way of life. The selection criteria of a person whose life history is to be taken into account depends on that person's contribution as a member of that community. It need not be of a reputed person having name and fame. It can be of the person you select as the key informant who has knowledge relevant to your topic of study.

Reflection

Key Informant: Key informant can be a person either female or male who has knowledge about the topic of research and can provide insider view. A key informant is generally selected by a researcher during the time of rapport building when the researcher goes around the field space trying to know the community and adjust to the surroundings.

A life history allows an in-depth study. The rationale behind the collection of life-histories is that people do not live in vacuum. They live in society and according to society, guided by its norms and values. Unlike historians and biographers who look for the life history of the unique or powerful persons, anthropologists collect the life histories of ordinary persons, in their ordinary day-to-day existence; so that they can learn about the general culture and the way of life in a time period. Life histories often reflect changes and the impact of social and cultural events and transitions on the life of a person. One of the most celebrated life histories in anthropology is of Pedro Martinez, written by Oscar Lewis, which describes the life of an ordinary Mexican person and his family in great detail.

The individual life history method was developed in American cultural anthropology, as it faced the distressing situation of vanishing tribes. Quite often, they could locate only a single or very few members of a tribe and collection of detailed life history of a single person was the only way in which something about this vanished tribe could be reconstructed.

(iv) Case Study

Herbert Spencer was the first sociologist to use case material in his ethnographic work. A case study involves an in-depth research of a particular event, incident or phenomena where a community or a group of people are directly involved or affected. Herein, we can take the example of the Bhopal Gas Tragedy which happened in Bhopal on December 3, 1984. One can study the after effects of the tragedy in terms of physical or biological issues, psychological issues or medico-legal issues,

etc. In such a study, the homogeneity of the group is described in terms of its association with the tragedy and how the individuals relate to the tragedy. Human mind has a way of remembering incidents and occurrences that are relevant to their own selves. Thus, case studies of different people relate directly or indirectly to the incident when taken can provide information on the same context, but from different perspectives or levels of memories and understanding of the event.

A case study is a holistic method that enables us to get an all-round perspective on a single incidence or event. Some anthropologists, like Max Gluckman and Van Velson, had also devised what was known as the extended case method. This was often used for analysis of conflicts and legal disputes and cases and basically consisted of following a case or an event over a long period of time, so that one could get an insight not only into structures and norms, but also into processes of social life.

(v) Genealogy

Genealogy helps in tracing the line of descent. It forms an integral part of anthropological fieldwork as it connects the past to the present. Genealogical studies have also unveiled the myths and beliefs associated with ancestors and ancestor worship. For example, during a genealogical study in a Karbi village, it was seen that many people in the family shared the same names. The genealogy revealed that newborn in a family could be named only after those ancestors for whom the *chomangkan* (ritual related to ancestor worship) ceremony had been performed. As the *chomangkan* ceremony required a huge amount of funds and finances, the Karbis have almost stopped performing this ritual and in the village the last *chomangkan* had taken place some twenty years ago, when the study was being conducted in the late nineties.

(vi) Focus Group Discussions

Till now we have been discussing one-to-one interaction via direct or face-to-face interview of the researcher, with the individuals in the community. Focus group discussion is a way of interviewing a group of people within the community who can contribute to the topic of study. The researcher at times might feel the need to have interaction with more than one person on the same topic or the opinion of many people on the topic might prove beneficial to the research. In such a case Focus Group Discussions (or FGDs) are conducted. While conducting a FGD, the group comprises of 8-10 people. A small group is manageable and the moderator can keep the conversation going. If the group is large, some might not feel comfortable to speak, while others might dominate the flow of conversation. In a FGD, normally a heterogeneous group or different stakeholders are selected so that their views and opinions on the same topic can be understood. While conducting an FGD the researcher does not participate in it but observes and records the entire session.

This technique is more suitable for goal-oriented and action research, where one is focusing only on one aspect, like say introduction of polio vaccine in a village or assessing people's attitudes to the introduction of a new welfare scheme. It is rarely used for quantitative research.

i. Data compilation, analysis and writing a report

In this part of the synopsis the researcher needs to define how the data collected in the field during fieldwork would be compiled, analysed and the report would be

written. The researcher has to define in detail the methods, tools and techniques that would be used like SPSS software or any other methods to compile and analyse the data. See Unit 13, BANC-102 for more information on data compilation.

j. References

In this section let's start with an understanding of the difference between bibliography and reference. Bibliography pertains to writing down of all the books that the researcher has read during the course of the project work. References on the other hand includes only those works that the researcher has cited in the text or in the project report. For example, a reference would include the work of Hugo (an author) if the researcher had cited his work in the introduction section of migration. However, if the researcher has read Hugo's annual report on Migration and not quoted him in the text than Hugo's work would not be included in the references but if the researcher prepares a bibliography than Hugo's work would be cited in it. Before we move on to the style of presentation of different types of references one pointer for the presentation of references is that it has to be in an alphabetical order where the surname of the author comes first. Now let us take a look at how to present references from various sources like from a book, edited book, journal, chapter from a book or from some website or online journal.

How to use quotes in the text like in the introduction section of your work.

In this section we will be presenting an example as how do we quote from a text. Let's take Hugo's work for migration and see how we will quote it and also how the reference has to be done.

Quotations in the text of our writeup.

"Undocumented migration is increasingly an issue within the region. It is estimated that some of Asia's largest undocumented migration flows may be among the largest overall contemporary flow with Bangladesh-India alone involving up to 17 million people". (Hugo 2010:7).

In this quotation we have added inverted coma "….." to the text that was directly taken from the author Hugo's work and written the author's name in bracket (Hugo….) with the year of publication that is 2010 and the page number from which the quote was taken that is 7.

Below are a few examples of how reference has to be done if there are more than one author or more than one book in the text.

When in the text you are referring to one author

… Hugo (1994) discussed… or …

When the same author has more than one work referred in a single year

… Hugo and (1994a; 1994b)… for a single authored piece-use a, b, etc.

When the work is done by two people

… Hugo and Crews (1993) discussed … or

When the work is by three or more people use et al.

… Hugo et al. (1991) discussed…

How to prepare the Reference section

Now let's check how we will quote in the reference section.

For Book

Example 1

Hugo, G. 2010. "The future of migration policies in the Asia Pacific region". http://publications.iom.int/system/files/pdf/wmr2010_migration_policies_asia-pacific.pdf accessed on 31.12.2018.

The author's surname comes first, followed by the initials of the name, year of publication, the article or book name (as it is from a website the name of the article is in inverted comma) followed by the link of the website, we also need to give the date when the website was accessed.

Example 2

Bernard, H.R. 2006. *Research methods in anthropology: Qualitative and quantitative approaches*. Lanham: AltaMira Press.

In this reference the author's work is in italics as the work was published in a book, the details of the place where the publication was done along with the publisher details also needs to be mentioned.

Example 3

Gupta, A., and Ferguson, F. (Eds.). 1997. *Anthropological locations: Boundaries and grounds of a field science*. Berkeley: University of California Press.

In this case the reference is of an edited book by two authors.

For Chapters in Books and Edited Books

Channa, S.M. 2015. Getting the writer's cramps! Making the transition from modernism to post-modernism in writing anthropology. In V.K., Srivastava (Ed.). *Experiences of fieldwork and writing* (221-237). New Delhi: Serials Publication.

In this reference the author is S. M. Channa whose work we have quoted from the edited book by V. K. Srivastava. The book is in italics, along with the place of publication and the publisher details. In such references the page number of the work also needs to be mentioned. Here the page numbers are (221-237).

For works published in a Journal

Hasan, R. 2015. "A socialization of grief: An auto-ethnographical account". *Man in India*, Special Issue on *Autoethnography*, edited by Queenbala Marak, Vol 95: No-1. pp 115-123

In this case the work of the author that has been used as a reference is from a journal. Here the volume number of the journal is included (Vol 95: No-1). In case of journals, it is important to cite the volume number, as in a year there can be more than one publication, as journals are published either quarterly, biannually or annually.

Some more examples

Austin- Broos, D. 1991. "Aesthetics or politics: A choice for anthropology". *Social Analysis,* 29:116-129,

Bindon, J.R. 1994. "Some implications of the diet of children in American Samoa". *Collegium Anthropologicum*, 18:7-15.

Bindon, J.R. and Crews, D.E. 1993. "Changes in some health status characteristics of American Samoan men: A 12 year follow up study". *American Journal of Human Biology*, 5:31-38.

Bindon, J.R, Crews, D.E., and Dressler, W.W. 1991. "Life style, modernization, and adaptation among Samoans". *Collegium Anthropologicum*,15:101-110.

(REMEMBER THAT et al. IS STRICTLY NOT ALLOWED IN LIST OF REFERENCES)

When the citation of an author is both in a journal and a book

Barth, F. 1987. *Cosmologies in the making: A generative approach to cultural variation in inner New Guinea*. Cambridge: Cambridge University Press.

1989. 'The analysis of culture in complex societies'. *Ethnas* 54(3-4):120 142.

When we use references of the same author we do not repeat the name of the author in the reference. We just put the year of publication for the next book or journal that we have used as reference.

Some more examples.

Schefold, R. 1972-73 "Religious involution: Internal change, and its consequences, in the taboo system of the Mentawaians". *Tropical Man*. 5:46-81.

1973 "Religious conceptions on Siberut, Mentawai". *Sumatra Research Bulletin.* 2:120-24.

1980 "The sacrifices of the Sakuddei (Mentawai Archipelago, Western Indonesia): An attempt at classification". In R. Schefold, W. Schoorl, & J. Tennekes. (Eds.) *Man, meanings, and history: Essays in honour of H.G. Schulte Nordholt*. The Hague: Martinus Nijhoff.

1982a "The efficacious symbol". In E. Schwimmer and P.E. de jong. (Eds.) *Symbolic Anthropology in the Netherlands*. The Hague: MartinusNijhoff.

In this section we have put an (a) after the year while mentioning the author's work that was published in 1982a. As a mark of identification if the author has published more than one work in the same year, it is noted for example as 1972a., 1972b. etc.

Website

For a web site, the first element would be the individual or registered name (give as much information as possible), Year last updated, group responsible for the site with their address (if available/applicable), the date site was last updated, the date of access, and the URL address. The in-text citation would be (WHO, 1999).

WHO Country Health Information Profile: Samoa. U.N. W.H.O., Manila, Philippines. (updated July 1, 1999; accessed February 23, 2007).

http://www.who.org.ph/chip/ctry.cfm?ctrycode=sma&body=sma.htm&flag=sma.gif&ctry=SAMOA.

http://www.merriam-webster.com/dictionary/rapport accessed in 2017.

https://msu.edu/user/mkennedy/digitaladvisor/Research/interviewing.htm

k. Appendix

This section in a synopsis, report or book presents additional information like one includes the structure of the interview guide or schedule. Any other supplementary information that would help in enhancing and detailing the research work.

1.2.2 SUMMARY

Now let us quickly summarise what we have been reading in this manual. In this manual we have tried to guide the learners as to how to prepare a synopsis for a research proposal. This manual is basically a compilation of the two units 12 and 13 in your course work BANC-102 with additional inputs to allow the learners an insight on the various steps involved in writing a synopsis. The manual explained in detail the various criteria's and elements that one needs to keep in mind while preparing a synopsis like the research design, identifying a research problem and how to approach the problem. The relevance of literature review has also been taken up. We have tried to guide you as to how as a researcher you can plan and conduct a research. Three basic question a researcher must always focus on at every stage of the synopsis and research work are (a) Why am I doing the research? (b) How will I conduct the research? (c) What would be the outcome of the research?

WHERE TO SUBMIT

Once the synopsis has been written and discussed with your supervisor, you need to fill the forms attached herewith from your supervisor. Scan the forms with the signature of your supervisor and along with the synopsis and email it to bscanh@ignou.ac.in.

WHEN TO SUBMIT

Research Proposal/Synopsis of Projectwork (BANE 154)

- For January Session submit latest by 15th of May
- For July Session submit latest by 15th of November

1.2.3 REFERENCES

Boyce, C., & Neale, P. 2006. *Conducting in-depth interviews: A guide for designing and conducting in-depth interviews for evaluation input.* MA, USA: Pathfinder International.

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1.3 FIELDWORK AND DATA COLLECTION PROCEDURE

Contents

LEARNING OBJECTIVES

After reading this manual you will know:

- how socio-cultural anthropologists conduct research;
- what does fieldwork involve; and
- the steps involved in a research project.

1.3.0 FIELDWORK PREPARATION, RESEARCH METHODS, TOOLS AND TECHNIQUES

In this section we are going to discuss how to conduct the fieldwork. Once the research synopsis is prepared, the next phase is planning and preparing for fieldwork. The first step in establishing a fieldwork project is to decide on the location or locations for the research.

The second is to find a place to live.

You should take proper health precautions. Before leaving home, you should obtain all relevant immunisations. For research in a remote area, a well stocked medical kit and basic first-aid training are essential.

Depending on the field's location, preparation for the field may involve buying specialised equipment, such as a tent, warm clothing, waterproof clothing, and sturdy boots. Research equipment and supplies are another important aspect of preparation. For example, cameras, video recorders, tape recorders, and laptop computers are now basic field equipment you should carry to the field for recording data in the field itself.

All the students are required to maintain a field dairy and record the data relating to the topic assigned in a separate notebook. The field dairy includes the day's activities (with details of time and place of data collection) such as the following:

- Respondents met
- Data collected
- Lessons learnt (identification of key informants)

- Data verified.
- Problems encountered.
- Interesting observations,
- Personal feelings.

Generally students of anthropology leaving for fieldwork carry the following with them:

- Research proposal
- Checklist of items to be collected
- Adequate number of questionnaires, interview guides etc.
- Notebooks for writing field dairy
- Cameras with accessories
- Audio recording devices
- Appropriate instruments in biological research
- Census particulars and study area maps
- Identity card
- Letters of introduction

Site Selection

A research *site* is the place where the research takes place, and sometimes a research involves more than one site. The research site depends upon the problem selected for study. The chosen problem may be concerned with a particular aspect of a tribal community, a peasant community, a rural society or a modern society. Therefore the site would be located in the habitat of the relevant society. Ethnographers have also studied a range of social settings, such as organisations, institutions, meetings, and just about any setting in which humans are interacting. Following are some different settings that have been studied by ethnographers:

- sacred places of tribals,
- tribal weekly markets,
- food gathering activities,
- religious festivals,
- social movements,
- shopping malls,
- jails/prisons,
- family settings,
- industry or work settings,
- slaughter houses,
- hospitals, city halls, and agencies.

The ethnographic study of various types of social settings is based on various attributes of human interaction.

In the field a researcher may experience culture shock. Culture shock is the feeling of uneasiness, loneliness, and anxiety that occurs when a person shifts from one culture to a different one. The more different the two cultures are, the more severe the shock is likely to be. Culture shock happens to many cultural anthropologists, no matter how much they have tried to prepare themselves for fieldwork. Culture shock can range from problems with food to language barriers and loneliness. Food differences were a major problem in adjustment for many anthropologists during fieldwork.

Building Rapport

After selecting a site, a researcher starts his fieldwork. In the early stages of fieldwork, the primary goal of the researcher is to establish rapport with the key leaders or decision makers in the study village who may serve as *gatekeepers* (people who formally or informally control access to the group or community). Establishing rapport involves gaining trust of the study population, and that trust depends on how the researcher presents herself or himself. In many cultures, people have difficulty understanding why a person would come to study them because they do not know about universities and research and anthropology. Also they find it difficult to understand the purpose of all sorts of questions being asked by the anthropologist. They may have their own explanations based on previous experience with outsiders whose goals differed from those of cultural anthropologists, such as tax collectors, businessmen, family planning promoters, and law-enforcement officials. As anthropologists do not have any authority or official position, it is very important for them to establish rapport with the people and approach them as humble learners (Barbara D. Miller 2012).

Data Collection Methods, Tools and Techniques

Once the researcher builds rapport in the field, the next step is collection of primary data. This is a very important part of the fieldwork as this is the base of the whole project work or dissertation. In the field, the researcher can collect data using anthropological methods, tools and techniques (see block 4 course BANC102).

The goal of the researcher is to collect information or *data* about the research topic. In socio-cultural anthropology, variations exist about what kinds of data to emphasise and the best ways to collect data.

- A **deductive approach** is a form of research that starts with a research question or *hypothesis,* and then involves collecting relevant data through observation, interviews, and other methods.
- An **inductive approach** is a form of research that proceeds without a hypothesis and involves gathering data through unstructured, informal observation, conversation, and other methods.

Data can be of two types:

- **Quantitative data** or numeric information, such as the extent of land in relation to the population or the number of people with particular health problems. Deductive methods are more likely to collect quantitative data.
- **Qualitative data** or non-numeric information, such as recordings of myths, conversations and filming of events. Inductive methods are more likely to collect qualitative data.

Most anthropologists, to varying degrees, combine deductive and inductive approaches and quantitative and qualitative data. Anthropologists have labels for data collected in each approach.

- **Etic approach** refers to data collected according to the researcher's questions and categories, with the goal of being able to test a hypothesis.
- **Emic approach** refers to data collected that reflects what insiders say and understand about their culture, and insiders' categories of thinking.

Cultural materialists are more likely to collect etic data, whereas interpretivists are more likely to collect emic data.

Again, however, most cultural anthropologists collect both types of data (Miller 2012).

In anthropology there are several types of fieldwork methods, tools and techniques that are used while conducting research. Below we will discuss a few fieldwork methods that are used. A combination of observation of what people actually do with verbal data about what people *say* they do and think is essential for a well-rounded view of a culture (Sanjek 2000).

People may say that they do something or believe something, but their behaviour may differ from what they say. All observations are not scientific. An observation becomes scientific only if it is planned and executed systematically. It may take place in a real life setting or in a laboratory. An anthropologist as an ethnographer observes individual and collective behaviour in real-life settings.

For collecting data in the field, researchers use schedule and questionnaire.

- A schedule is a structured set of questions on a given topic which are asked by the interviewer or investigator personally. The order of questions, the language of the questions and the arrangement of parts of the schedule are not changed. However, the investigator can explain the questions if the respondent faces any difficulty.
- A questionnaire refers to a device for securing answers to questions by using a form which the respondent fills in by himself. It consists of some questions printed or typed in a definite order.

Participant observation method is the hallmark of anthropology. This method was discovered by Bronislaw Malinowski. Using this method, the researcher or ethnographer not only observes but participates in the activities of the culture. In this manner, anthropologists attempt to record the emic (insider's view of the behaviour) as opposed to the etic (outsider's view of the behaviour). This does not mean that the emic and etic are mutually exclusive; they can complement one another by giving both subjective and objective interpretations.

In addition to using participant-observation, cultural anthropologists in the field rely heavily on ethnographic interviewing. An interview is a technique for gathering verbal data through questions or guided conversation. This technique is used for obtaining information on what people think or feel (*attitudinal data*) as well as on what they do (*behavioural data*). It is more purposeful than a casual conversation.

Depending on the level of control retained by the interviewer, ethnographic interviews are of two types:

- *Unstructured interviews:* The interviewer asks open-ended questions on a general topic and allows interviewees to respond at their own pace using their own words. The interviewer exercises minimum control in these interviews.
- *Structured interviews* (close ended): The interviewer asks all informants exactly the same set of questions, in the same sequence, and preferably under the same set of conditions.

If we can draw an analogy between interviews and school examinations, structured interviews would be comparable to short-answer tests whereas unstructured interviews would be more like open-ended essay tests.

An interview may involve only two people, the interviewer and the interviewee, or several people in what are called *group interviews* or *focus groups*. *Focus groups* are small groups (composed of six to ten people) convened by an anthropologist to discuss a particular topic. Although focus groups are popular for conducting public opinion polls and commercial product marketing, applied anthropologists use them to both save time and generate insights not always possible by merely interviewing individuals.

Other techniques used to collect data are the following:

- The genealogical method: By this method a researcher can collect data on kinship, family, and marriage patterns of a group. It is a basic method used to help anthropologists understand social relationships and history.
- The case study method: In this method an intensive study of a case is done. Case is a social unit with a deviant behaviour. It is a method of qualitative analysis. In anthropological research, this method is used extensively to obtain a complete and detailed account of a social phenomenon or a social unit, which may be a person, family, community, institution or an event.
- The life history method: By this method a researcher gets the personal history of an individual. This way anthropologists gain insights into a culture. It can help the researcher understand the emic perspective.

Anthropologists face many ethical problems while conducting research. In the field a researcher must observe the following rules:

- Obtain informed consent before the study or the interview begins.
- Safeguard the informants' rights, interests and sensitivities.
- Communicate the aims of the interview to the informant.
- The informants should have the right to remain anonymous and speak "off record".
- There should be no exploitation of informants for personal gain.
- Do not explore any sensitive issues.
- Ensure confidentiality of data obtained.
- Learn enough about the culture of informants to ensure it is respected during the data collection process.

1.3.1 METHODS TOOLS AND TECHNIQUES IN PHYSICAL/BIOLOGICAL ANTHROPOLOGY

1.3.1.1 SOMATOMETRY

INTRODUCTION

Somatometry is the metric study of living human body. This science of measurement of human body also holds immense significance in racial classification, evolutionary studies and in designing of clothes and equipment. This section will facilitate you with concise description of standard techniques, positions and methods for taking somatometric measurements. Somatometric measurements are defined on the basis of various anatomical landmarks and are useful in describing the morphology of man.

Somatometry (measurement of the dimensions of body) involve different types of instruments for taking measurement, as you learnt in your course Introduction to Biological Anthropology depending upon its nature. Anthropometric measurements use growth references and standards for determining the growth, nutritional status and welfare of children and adolescents. The anthropometric measures such as Z-score and percentiles have been widely used to assess the nutritional status of an individual and his/her growth. In this section, we have also covered nutritional status assessment through anthropometric indices and dietary practices. Nutritional status is the total of the anthropometric indices of an individual which are influenced by consumption of nutrients. All this information is obtained by physical, biochemical and dietary practices which depends on the quality and the quantity of food consumed and the individual's physical health. The nutritional status of an adolescent has an important implication on his/her health, in developing of chronic diseases and holds importance in breaking the sequence of malnutrition. Dietary pattern that is a crucial factor to determine the nutritional factor, is the general outline of the food and nutrient intake and utilisation which is characterised on the basis of common eating habits. And, the analysis of dietary patterns provides a more all-inclusive imprint of the food intake habits or practices within a population.

GROWTH STATUS: SOMATOMETRY

Somatometry is made of two words '*somato*' which means living and 'metric' which refers to measurement, so in simple terms it means measurement of living beings. Therefore, somatometry a division of anthropometry is defined as a systematic technique to measure living body including head and face. Anthropologists have formulated number of measurements for describing the morphology of man. These measurements are not arbitrary and are based on anatomical landmarks and have been in use for hundreds of years. They are useful in comparing various kinds of people living in different geographical regions, i.e., for racial comparisons or to study variations in body types. Physical growth of children is studied on the basis of their body measurements. The nutritional status of young and adults is also assessed with the help of these measurements. It also facilitates in the determination of certain physiological functions like vital capacity, basal metabolic rate, etc. Data generated on the basis of anthropometry surveys of populations has been an asset for designing proper equipment for use in industry and defence purposes, spaceships, garments, etc. The anthropometric surveys also provide norms of the physique of any population and trends of changes in morphological traits. Let us learn how we take body weight or weight, stature commonly called as height, and mid upper arm circumference. You are familiar with landmarks and procedure of some measurements, nevertheless lets go through it again.

Body weight

Weight should be taken by means of standard weighing machine without any zero error with fine accuracy. Body weight is measured in kilograms, which gives an idea of body mass. The weight should be taken with minimum clothes and barefoot.

Instrument used: Weighing machine

Method: The needle of the weighing scale is adjusted to remove the zero error. The subject stands with equal weight on both the feet. The head of the subject should be forward. The reading on the weighing scale is noted when the needle is stationary.

Precautions

- ❖ Take care that the subject is wearing minimum clothes.
- ❖ Weight should not be taken right after taking meals.
- ❖ Make proper adjustment for clothes worn by the subject at the time of taking weight. It is recommended that at the time of recording weight of the clothes should also be adjusted.

Stature

Stature (floor-v): It measures the vertical distance from the standing floor to the vertex.

Vertex (v): It is the highest point on the head when the head is in the Frankfurt-Horizontal (FH) plane, also known as eye-ear plane. Vertex is not an anatomically fixed point and is dependent on the orientation of the head.

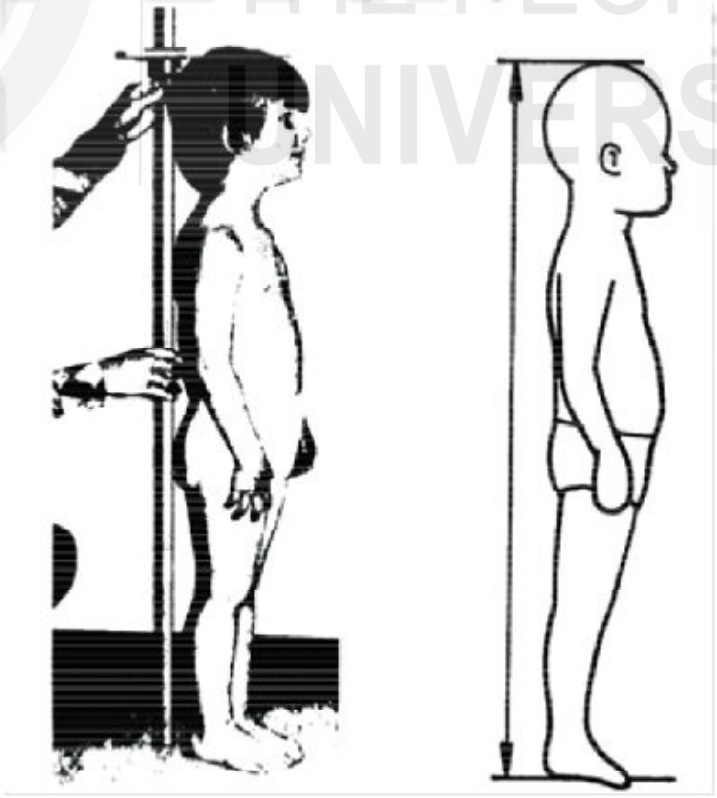


Fig. 1 : Stature

Source : www.ovit.nist.gov

Instrument used: Anthropometer

Method: The subject should stand erect, barefoot on a level floor against the wall with her/his back and buttocks touching the wall. The heels should touch the wall and toes are at an angle of 45° to each other. The shoulders should not be raised upwards. The arms should be in standard arm hanging position and the palms of the hands should touch the thighs. The anthropometer is placed on the back of the subject if the vertical wall is not available. The head of the subject must rest without any strain in the eye-ear plane or FH plane, i.e., tragion and the right orbitale must lie in the same horizontal plane (Refer to the BANC 101 Manual). Now with the position of the subject set, standing on the right side of the subject with anthropometer in the median sagittal plane of the subject and allow moving cross-bar to touch the vertex lightly. Note that the anthropometer is in vertical position.

Precautions

- The subject is barefoot.
- The heels, back and buttocks of the subject should touch the wall.
- The toes are at an angle of 45°.
- The arms should be in standard arm hanging position.
- The head of the subject should be in eye-ear plane

In case of adults or child the height is measured up to the nearest millimeter using anthropometer. And, a sliding board made of wood is used for measuring the length of children. Infantometer is used for the measurement of recumbent length in case of children who are less than 2 years of age.

***Mid Upper Arm Circumference (*MUAC)**

The accurate and a reliable way to measure fat-free mass, is the upper arm circumference at the midway between the tip of shoulder and the tip of elbow on the left side of arm. The mid arm point is assessed by measuring the distance from the tip of the shoulder to the elbow and then dividing it by 2.

Instrument used: Flexible steel tape

Method: The subject is asked to hang the hand freely in standard arm hanging position. The tape is placed horizontally around middle of the upper arm where generally the bicep muscles are most developed and reading is recorded.

Precaution

- The arms should be hanging freely.
- The tape should neither be tightly nor loosely held.

Note that the low reading of MUAC represents the loss of muscle mass. For determining the risk of mortality (in children) and individuals having HIV/AIDS, MUAC is the best assessing and screening tool. It is the only anthropometric tool for evaluating the nutritional status in case of pregnant women as well.

Activity

Take weight and mid upper arm circumference of five subjects

S.No	Name of the Subject	Weight of the Subject (kg)	Mid Upper Arm Circumference (cms)
1			
2			
3			
4			
5			

ASSESSMENT OF CHRONOLOGICAL AGE

Chronological age is the number of years represented by revolutions of earth around the sun. It is calculated from the date of birth. In other words, it is the definite number years an individual has lived his/her life in years, months, days or in a combination of all of these factors. For e.g. 16 years, 3 months and 10 days.

Chronological age estimation approach provides the age of an individual in terms of years, months and days. It is mainly used to evaluate the accurate age of an individual with respect to day, month and year. Let's understand this with the help of an example, if an you want to find out the age of an individual born on April 02, 1990 on January 10, 2016, then subtract 10.01.2016 by 02.04.1990.

$$2016.1.10 - 1990.4.2 = 25.7.8$$

Anthropometric measurements use growth references and standards for determining the growth, nutritional status and welfare of children and adolescents. The growth standard that is an optimum growth, indicates that all children are potentially able to achieve a level, whereas a growth reference is the distribution that is used for the purpose of comparison.

The anthropometric measures such as Z-score and percentiles have been widely used to assess the nutritional status of an individual and his/her growth. The parameters of growth are

- Undernutrition that includes underweight, stunting and wasting; and
- Over nutrition involving overweight and obesity.

Z-scores (-2 and +2) and Percentiles (5^{th}, 85^{th}, 95^{th}, 97^{th}, 99^{th} percentiles) are used to categorise various health conditions. Moreover, sex-age specific anthropometric measures cut points are also evaluated using these factors.

As per WHO, use of growth chart i.e., growth reference on the basis of Z-scores assesses the nutritional status and growth of a children and growth charts are prepared on the basis of data generated.

Percentiles

The percentile of populations falls below the variable's value. Rank scale is used and it is more understandable. It also indicates the expected prevalence.

Limitations:

- Values are lumped to the lowest or highest percentiles
- This factor does not suit, in case of assessing longitudinal growth status and
- It is not comparable across different anthropometries.

The following table represents the percentile-Z-score conversion values

Additionally, percentile also defines the population's expected percentage that should be above or below the table. Different age-sex specific percentiles are also used to evaluate the growth of children and their nutritional status on the basis of anthropometric measures and other health conditions as well such as low or high blood pressure.

An interesting information, Z-score and percentiles are convertible to each other. For e.g. Z-scores of 2 and -2 matches to the 97.7th and 2.3rd percentiles while the 85th and 5th percentile correspond to Z-scores of 1.04 and -1.65 respectively (Wang and Chen 2012)**.**

PERCENTILES	Z-SCORE
0.2nd	-3
2.3rd	-2
2.5th	-1.96
5th	-1.64
15th	-1.04
16th	-1
50th (median)	0
84th	+1
85th	+1.04
95th	+1.64
97.5th	+1.96
97.7th	+2
99.8th	+3

Source - Wang and Chen 2012

Z-Scores

It is defined as the number of standard deviations away from the mean, when the distribution is in a normal process. The scale is continuous from "-" to "+". The main advantage of this factor is that it

- allows comparison between sexes and ages;
- also helps in quantifying the extreme values; and
- is good for evaluating the growth status in longitudinal changes.

One of the major drawbacks of this factor is that it is difficult to perceive than percentiles, especially for the public.

Z-scores are calculated on the basis of distribution of reference population; thus, it reflects as the reference distribution. The reference population can be taken by mean and the standard deviation (SD). Z-scores are also comparable across age, sex and also is a measure of dimensionless quantity. Z-score group can be subjected to a summary of statistics such mean and SD, and both can be studied as continuous variable. As discussed above, the main limitation of this process that they are easy to explain to the public eye and also limited in clinical settings.

They are also called as standard scores, where the z-score transformation is considered to be useful when comparing the relative values of different measures such as height vs. BMI from distribution of different standard deviations or means.

The following graph illustrates Z-score and the corresponding cumulative probability and percentile

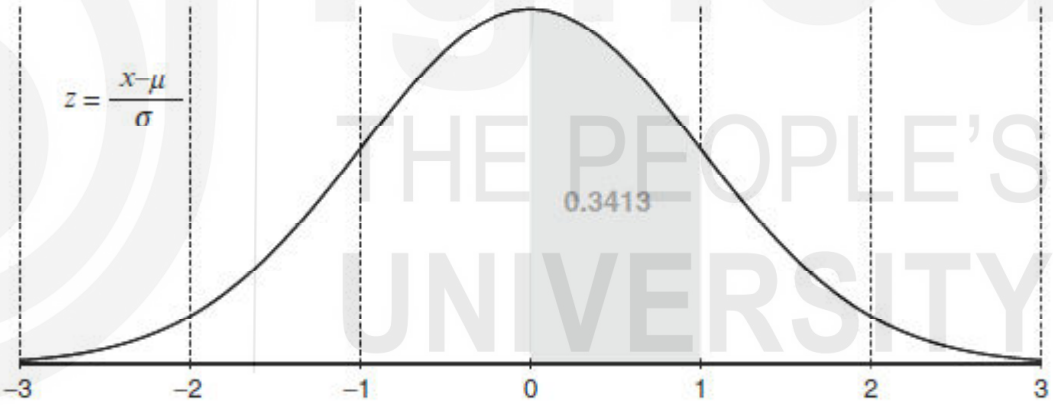


Fig. 2 : Z score

Source: Wang and Chen 2012

The transformed values of Z-score distribution will have a zero mean value or a standard deviation value of 1. This conversion process is called as normalising or standardising.

$$Z = \frac{x-\mu}{\sigma}$$

Height-for-age

This is the index that is used for evaluating stunting that is the presence of chronic malnutrition in children. Children who are stunted have poor physical and intellectual performance, thus the less work output leads to less productivity at the individual level and poor socio-economic status at the community/society level. If there is a

presence of stunting in a child for provided population, shows that the children are suffering from the chronic malnutrition, thus affecting their linear growth.

Stunting is a child's low height-for-age when compared to the standard child having from the same age group or same age. Child who is suffering from stunting is found to have the lower mental and the physical productivity capacity.

Weight-for-age

Weight-for-age is an index that is used for monitoring the growth for the purpose of assessing and evaluating the status of underweight children. By carrying out the community-based nutrition (CBN) activities every year, an analyst can assess the weight-for-age of all children who are less than 2 years of age. This index determines the body size and also reflects the levels of food intake and it is also used for assessing the acute and short-term under-nutrition.

$$\text{Weight for age} = \frac{\text{Weight of the child}}{\text{Weight of the reference child of the same age}} \times 100$$

Did you realise how important these concepts in the study of human growth and development are? Let's learn about others to have more insight about it.

BMI for Age

Body Mass Index (BMI) – This is measured when the weight of an individual (in kg) is divided by the height of same individual in meters squared.

$$\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (meters)}^2}$$

BMI is considered as a good indicator of undernutrition in relation to a chronic energy deficiency (CED) and is a non-invasive and inexpensive approach that is used for wide scale surveys for the assessment of malnutrition (WHO 2004).

Table: BMI cut-off values for the assessment of malnutrition status

Malnutrition Status	BMI
CED Grade III	BMI < 16.00 Kg/m^2
CED Grade II	BMI 16.00 Kg/m^2 – 16.99 Kg/m^2
CED Grade I	BMI 16.00 Kg/m^2 – 16.99 Kg/m^2
Normal	BMI 18.50 Kg/m^2 – 24.99 Kg/m^2
Overweight	BMI 25.00 Kg/m^2 – 24.99 Kg/m^2
Obese	BMI ≥ 30.00 Kg/m^2

Source: WHO, 2004

Activity

Take stature and weight of five subjects and calculate their BMI.

S.No	Name of the Subject	Weight of the Subject (Kg)	Stature (cms)	BMI Kg/ m^2
1				
2				
3				
4				
5				

OBESITY ASSESSMENT

Overweight and obesity have reached a level of epidemic in various countries and possess number of serious health and socio-economic consequences. Moreover, obesity has negative consequences related to psychological, medical and quality of life, it has drained all the health resources and also decreases the life expectancy. In various developing countries, there are different type of weight associated diseases such as obesity, overweight and underweight coexists simultaneously in different components of their populations (Uzogara 2016) (Fontela, et al. 2017).

There are various methods which helps determine obesity such as body mass index (BMI), skinfold caliper which are used to evaluate the body fat percentage. All these methods are simple and effective.

A. General – Body Mass Index

As mentioned above, BMI is measured when the weight of an individual (in kg) is divided by the height of same individual in meters squared. In case of adults, BMI estimates the clinical diseases such as type 2 diabetes, however, its prediction for children and adolescents is not that much. BMI is a global index that measures the nutritional status of an individual and is used to categorize individuals both on the basis of overweight/obesity and eating disorders in combination with the psychological standards. The drawback of BMI is that it does not differentiate the fat and lean masses.

$$\text{BMI} = \frac{\text{Weight (Kg)}}{\text{Height (meters)}^2}$$

BMI $kg/m^2 > 30$ indicates obesity and BMI $kg/m^2 > 40$ indicates morbid obesity, hence we need to be very careful. High value of BMI is indicative of high potential risk of getting diabetes, heart diseases and premature death.

B. Body Fat %

Body Fat % is the total mass of fat of human or other living divided by total body mass and then multiplied by 100.

C. Conicity Index

It is the simple anthropometric measure that is used to determine the central obesity (Shenoy & Jagadamba 2017)

$$CI = \frac{\text{waist circumference (m)}}{0.109\sqrt{\frac{\text{weight (kg)}}{\text{height (m)}}}}$$

D. Body Adiposity Indices

Let's have a look at commonly used Body Adiposity Indices. We have learnt about BMI that is used quite commonly.

Waist Circumference –Waist circumference measures the minimum circumference of the torso which is the level of normal waist. This central fatness is of great importance in assessing deep adipose tissue.

Instrument: Flexible Steel Tape

Method: The subject stands erect with the weight uniformly balanced on both the feet that are placed about 25-30 cms apart from each other. While measuring, mark the level of the lowest rib (margin) and the iliac crest in the mid axillary line. Pass the measuring tape on the waist in the horizontal direction in midway between the margins of lowest rib and iliac crest. Measure the circumference in cm up to the nearest cm, ideally the investigator cm should sit on a stool in front of the participant.

Precautions:

- The tape should neither be tightly nor loosely held
- Subject should stand straight with body relaxed
- Feet should be together

Waist-Hip-Ratio(WHR)

Waist-Hip Ratio (WHR) is defined as the ratio of the circumference of the waist to the circumference of hip. It is commonly used technique for defining body fat distribution. In other words it is a useful measure for assessing the abdominal obesity and has very limited accuracy.

$$\text{Waist-Hip Ratio (WHR)} = \frac{\text{Waist Circumference (in cm)}}{\text{Hip Circumference (in cm)}}$$

Waist-Hip ratio is found to be a good indicator of stroke and ischemic heart disease. WHR value > 0.90 in males, WHR value > 0.80 in females are considered to high risk of diseases such as diabetes.

In adults, the ratio of waist hip is independently related with the risk of morbidity after performing adjustments for relative weight, such that the use of body shape and relative weight at the same time provides a good prediction about the morbidity risk.

Instrument: Flexible Steel Tape

Hip Circumference (HC) - This is the distance round the hip measured through the largest part of the buttock's region using a tape.

Method: The subject stands straight and breathes out. The tape is placed horizontally over the buttock's region. The circumference is measured at the point for obtaining the maximum circumference.

Precautions

- ❖ The feet should touch each other
- ❖ Weight of the body should fall equally on both the feet
- ❖ The tape should neither be tightly nor loosely held
- ❖ Stand up straight with body relaxed
- ❖ Keep your feet together
- ❖ Both circumferences must be measured on standing subjects at the end of a gentle expiration.

Mid Upper Arm Circumference

Refer to earlier section on page 39.

E. Regional Adiposity Indices

Waist Circumference (WC)

Waist Circumference –Waist circumference measures the central fatness that is an indicative of lipid profile or insulin resistance than total fat.

Waist Circumference	Adiposity Status
WC > 35 inches for women	Obesity
WC > 31.5 inches for Asian Women	Obesity
WC > 35 inches for women	Overweight
WC > 40 inches for men	Obese
WC > 35.5 inches for Asian men	Obesity
WC > 40 inches for men	Overweight

Source: WHO 2008

Waist-Hip-Ratio(WHR)

Refer to earlier section.

Waist-to-Height Ratio (WHtR)

It is measured when WC divided by Ht i.e., height. All are measured in same units.

This is a simpler method than BMI (Fontela, 2017, Uzogara, 2016). We have learnt in the earlier section about waist circumference and stature/Height.

Reference to understand is

WHtR> 0.5 for men or women indicates Obesity

WHtR< 0.5 for men or women indicates healthy weight

Activity

Calculate WC of five subjects and identify their adiposity status.

S.No	Name of the Subject	Waist Circumference (cms)	Adiposity Status
1			
2			
3			
4			
5			

ESTIMATION OF BODY COMPOSITON

Body composition is the percentage of fat and non-fat mass present in your body. Body that has a desirable lower percentage of body fat is referred as healthy body composition and a higher percentage of non-fat mass includes organs, muscles and bones. There are many approaches to assess body composition like densitometry, ultrasound, bioelectric impedance, anthropometry, CAT scanning, etc. As the name suggests some of the methods are invasive, expensive and time consuming, whereas anthropometry is non-invasive, affordable and subject friendly.

Anthropometric measurements and indices are also used such as weight, height, skinfold thickness, diameter, length and circumference that involves mathematical components. All these indices are the main components in estimating body segments (Lee et al. 2015).

Let us understand some of them.

Fat Percentage and Muscle Mass with Skinfold Thickness

Body composition and growth are the key aspects of health in populations. These factors can be assessed by measuring the fat percentage and the muscle mass. Skin fold thickness methods have been used to determine the subcutaneous fat. As mentioned briefly earlier, our body is mainly composed of two types of fat: Body fat, and Non-fat mass.

Body fat is found in muscle tissue, under the subcutaneous fat deposit or skin, and are also present around the visceral fat i.e., organs. These are the essential fats that helps protect body's internal organs, stores energy that act as fuel and also normalizes body hormones which are important for our body. Whereas, Non-fat mass areas (also called as lean tissues) include muscle, organs, tissues, water and

bone. These tissues are metabolically active as they help burn calories while body fat cannot do that.

Body fat percentage is used to estimate the total body fat on the basis of specific measurements and there are several ways to estimate it such as bio-electric impedance and Skinfold measurements. A skinfold caliper is used for the determination of skinfold thickness through which a prediction can be made of total body fat mass.

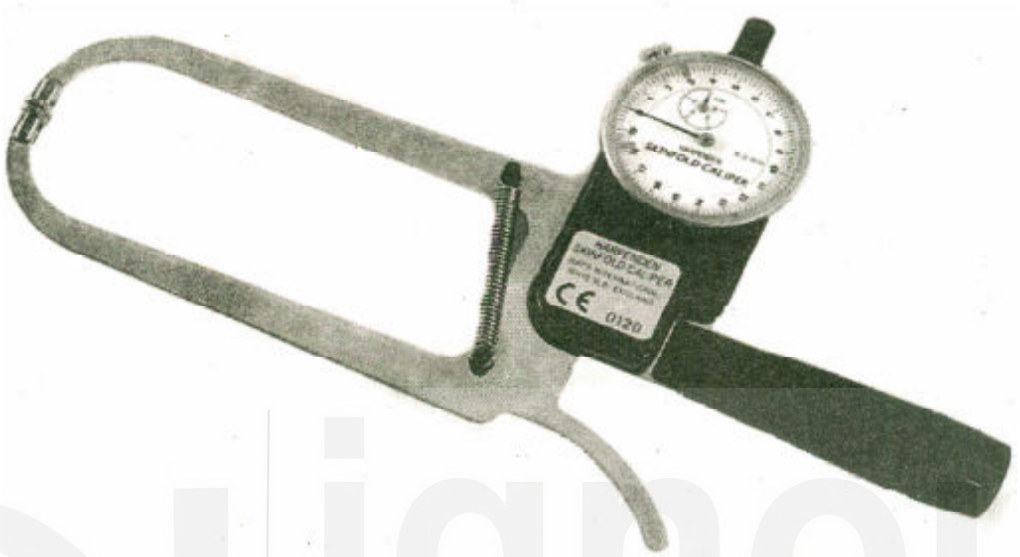


Fig. 3 : Harpenden Caliper

Source : www.harpendenskinfoldcaliper.com

Four skinfolds are generally used for determining total body fat:

Biceps Skinfold- It measures the maximum circumference of the upper arm when the biceps muscle is fully contracted with elbow flexed.

Instrument: Flexible Steel Tape

Method: The subject is asked to position the hand as shown in picture. The tape is wrapped around the contracted upper arm taking care that it remains at right angles to the long axis of the upper arm. The tape should be wrapped horizontally around middle of the upper arm where the bicep muscles are most developed, and reading is recorded.

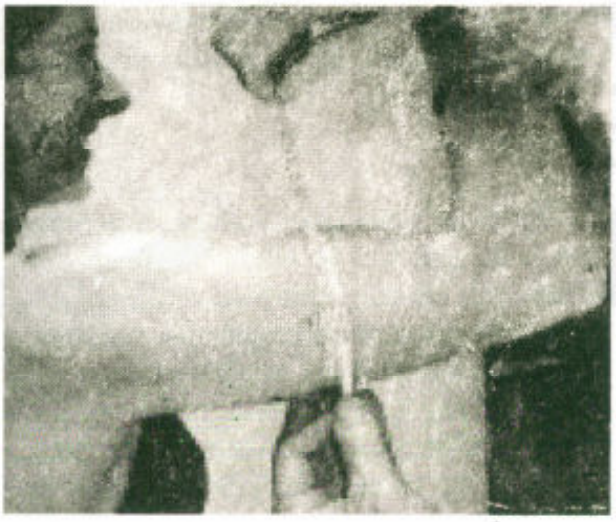


Fig. 4 : Biceps Skinfold

Source: www.KinanthrEometric_Asses.pdf

Precautions

- The reading should be taken where bicep is most developed
- The tape should neither be tightly nor loosely held.

Triceps Skinfold: It is measured in the midline of the posterior surface of the arm, over the triceps muscle in vertical direction at a point half way on the line connecting the lateral projection of acromion process of the scapula and interior margin of the olecranon process of the ulna

Instrument: Skinfold caliper

Method: The subject is asked to stand erect with arms in standard arm hanging position. Remember this is the skinfold thickness measured over the triceps in the middle of the posterior aspect of the arm at the level of the upper arm circumference or the biceps skinfold, in the line with the olecranon process. The skinfold over the triceps muscle of the right arm, one cm above and one cm below the marked point on of the upper arm midway between the acromion process and the superior border of the radius in line with the olecranon process is picked. Keep the jaws of the calipers at the marked level and note the value. The folds should be parallel to the long axis of the arm.

Fig. 5 : Triceps Skinfold

Source: www.KinanthrEometric_Asses.pdf

Precautions

- The arms should be hanging loosely and freely at the side of the subject.
- The caliper should be placed parallel to the mid-circumference line.
- While taking the measurement the pressure of the caliper should be released slowly.
- The reading should be taken in 4 seconds and the reading recorded to the nearest 4> millimeter

Subscapular skinfold – It is measured as the fold inferior to the inferior angle of scapula, at natural cleavage. The subscapular skinfold is lifted at 45 degrees to the horizontal plane.

Instrument: Skinfold caliper

Method: The subject stands erect with shoulders relaxed so that the upper extremity is hanging loosely. Standing behind the subject, palpate the vertebral border of the scapula with fingertip running down laterally until the inferior angle is identified. If the subject is obese, the subject is asked to fold her hand at the back, this way it it is easier to pick the fold. The subscapular skinfold thickness is measured below the inferior angle of the scapula. Using thumb and index finger, skin fold lightly below the most inferior angle of the right scapula is picked. The skinfold usually is slightly inclined' pointing downward and laterally in the natural cleavage of the skin. The jaws of the calipers are held at the marked level and note the reading.

Fig. 6 : Subscapular Skinfold

Source: www.KinanthrEometric_Asses.pdf

Precautions

- The subject should stand comfortably erect with loosely hanging upper extremity.
- While taking the measurement the pressure of the caliper should be released slowly.
- The reading should be taken in 4 seconds and the reading recorded to the nearest millimeter
- For all these measurements, subject is required to sit or stand in an upright position.

It is quite interesting to note that for all these measurements, subject is required to sit or stand in an upright position.

What precautions are required for taking biceps skinfold?

Mid Upper Arm Circumference (MUAC), the accurate and a reliable way to measure fat-free mass, is the upper arm circumference at the midway between the tip of shoulder and the tip of elbow on the left side of arm. The mid arm point is assessed by measuring the distance from the tip of the shoulder to the elbow and then dividing it by 2.

What to do in case you want to screen large number of populations? MUAC helps in the screening of large number of individuals (majorly at the community level) for community – based nutrition involvements such as Outpatient therapeutic programs (OPP) or during the emergent situations/circumstances

or supplementary feeding programs. This anthropometric screening tool is also used for children, pregnant women for SAM i.e., severe acute malnutrition and MAM i.e., Moderate acute malnutrition.

MUAC Measurement in Children – To measure the MUAC of children, a special tape is used that has 3 colors: red, yellow and green. Each color indicates different nutritional status.

Red: Severe acute malnutrition

Yellow: Moderate acute malnutrition

Green: normal nutritional status

Fig. 7 : MUAC Measuring Tape

Source: Unicaf Technical Bulleting No. 13

There are some specific cut-off values which are used for the screening purposes in the community-based interventions for SAM and MAM using MUAC

Target Groups	MUAC	Malnutrition
Children - < 5 years	11-11.9	Moderate acute malnutrition (MAM)
	<11 cm	Severe acute malnutrition (SAM)
Pregnant women/adults	17-21 cm	Moderate Malnutrition
	18-21 cm (with current loss in weight)	Moderate Malnutrition
	<17 cm	Severe Malnutrition
	<18 cm (with current loss in weight)	Severe Malnutrition

***Source*:** WHO, 2009

Bioelectric Impedance

This approach is used in the measurement of body composition and in the assessments of healthcare system. The fundamental principles and the wide variety of methods in case of bioelectric impedance are used to interpret the obtained information. A large spectrum of utilisation of bio-impedance is in healthcare system and facilities such as prediction of disease and the monitoring and keeping the status of all your body vitals. Biological tissues possess electrical properties which are categorised on the basis of electricity source which are:

- Active response - In case of bio-electricity, active response occurs when the biological tissue aggravates the electricity from ionic activities inside

the cells in the form of ECG i.e., electrocardiograph signal from the heart and EEG i.e.; Electroencephalograph signals from the brain.

- Passive response - It arises when the simulation of biological tissues starts through an external source of electric current.

The biological impedance and the bioimpedance is the ability of a biological tissue to obstruct the electric current. Number of studies have been conducted on the analysis of bio impedance and related to its applications in assessing the composition of body and estimating the clinical conditions. This is due to its intrusiveness, the low cost and portability of bioimpedance analysis. The bioimpedance is measured from the entire body and its segments individually through the use of single and multiple frequencies, and analysis of bioimpedance spectrograph.

Application of Bioimpedance Analysis

Let's have a look at significance of bioimpedance analysis. In healthcare facilities, bioimpedance helps in estimating the body sections to evaluate and monitor the consistent changes in nutritional status in in-patients and also observing the risk related to their nutritional status in out-patients. Various techniques such as BMI, skin fold and weight measurement in water are used for assessing the body composition. All these methods are used to estimate the fat mass and fat free mass, thus bioimpedance analysis can predict the total number of body fluids that is considered very useful for the prognosis of diseases/illnesses (Khalil et al. 2014).

NUTRITIONAL ASSESSMENT

In the above section, you learned majorly about nutritional assessment using the somatometry approach. This section discusses about the different methods of evaluating the nutritional status using dietary patterns and anthropometric indices.

Nutrition is considered as an important concept for preventive healthcare. An ideal nutrition level is the amount of food intake that promotes a good health. The nutritional level of individuals is interrelated to the status of diseases/illnesses and health. However, the calorie intake in excess amount leads to obesity whereas a small intake of calories results in the decrease of essential nutrients. All these changes results in biochemical alterations and eventually to clinical signs and symptoms. The requirements of nutritional intake are influenced by number of factors such as age, gender, physical activity, drugs, physiological status and alcohol consumption. Nutritional status is considered as the main and important health indicator to determine individual's health.

The main and the direct causes of malnutrition are:

- poor consumption of food and
- regular attack of diseases and infections, thus low defense system.

There are various indirect causes of malnutrition as well, they are:

- Low production
- Lack of awareness
- Less power of purchasing

- Poor sanitation and personal hygiene
- Highly prone to infections and diseases

Remember malnutrition is both undernutrition and overnutrition.

Importance of Assessing Nutritional Status

Assessment of nutritional status is imperative for the purpose of screening and identifying and also for the population that are majorly affected by malnutrition. This concept is found to be very useful in formulation and the development of nutritional involvements and awareness and they also help in evaluating the impact of these program at a community based and individual level.

As per the reports of World Health Organization (WHO), the main objective of assessing nutritional status is the improvement in the human health quality. There are two approaches which can be used for assessing the nutritional status: Direct and Indirect methods.

- Direct Methods: The assessment of nutritional status is conducted using different methods/approaches which are:

  Anthropometry - A

  Biochemical methods – B

  Clinical methods, and - C

  Dietary methods - D

Remember this as 'ABCD'

- Indirect Methods: These methods involve the statistical data that are obtained from the demographic and census data, and from other important sources such as population density and per capita income.

Here we will consider Anthropometry – A and Dietary methods – D. We have already dealt with Anthropometry-A in earlier section. Refer to the section and here will go through very briefly.

Anthropometric Indices

Anthropometry that we discussed earlier, originates from two words: *Anthropo* means human and *metry* means measurement. Anthropometric measurements are used to assess the nutritional status in community by recording growth or changes in the composition of body. All methods are useful, however, no single method provides a comprehensive view about the nutritional status of the population and thus, it sometimes becomes important to use a mixture of methods. At the time of using combination of approaches, one should always keep in mind the objectives and accessibility of resources (Omage and Omeuemu, 1890-1897).

Anthropometry is an effective, non-invasive and quite inexpensive method that is available to determine the body size, proportions and human body composition. The most important and utilised measurements are:

- Height/Weight

- Weight
- Mid Upper Arm Circumference (MUAC)
- Head Circumference
- Chest Circumference
- Waist circumference

Most of the measurements have been discussed in the above section. Go through the section carefully for Height/stature, weight, circumferences at mid upper arm and waist. In this section we will learn about Head and Chest circumference.

Head Circumference – It is the maximum circumference of the head taken just above brow ridges. It is the measurement of head along with the supra orbital ridges i.e., the forehead anteriorly and occipital prominence posteriorly. Occipital prominence is the bulging and protruding part on the back part of the human head that you must have noticed.

Instrument used: Flexible steel tape

Method: The subject sits down and the tape is placed around the head above brow ridges and adjusted on the back of the head such that maximum circumference is recorded.

In case of assessing the chronic problems related to nutritional status in children below than 2 years of age, head circumference measurement is helpful because brain grows faster during the initial 2 years of life. But after completing 2 years, the brain's growth becomes more inactive and at that time Head Circumference is not found to be useful.

Precautions

- Measurement tape should not be too loose or too tight
- Keep the head straight.
- Tape should be kept horizontal

Chest Circumference (CC) – It is the circumference of the chest measured at the level of union of third and fourth sternebrae. The measurement should be taken at the end of normal expiration

Instrument used: Flexible steel tape

Method: The subject should stand erect with tape running around the landmark mentioned above. Care is taken to keep the tape horizontal.

Measuring chest circumference is of great value for determining growth in the 2nd and 3rd years of life.

Precautions

- Measurement tape should not be too loose or too tight
- Tape should be kept horizontal
- Tape should be touching the body.

Indicator is an index or a scale that shows weight-for-age or weight-for-height. When all these scales combined with a particular cut -off values, then in that case it helps determine the nutritional status of a child (whether the child is undernourished or malnourished).

Let's understand this with an example.

A child whose weight for height or weight for age, falls below the specific cut-off values as shown here in the following table.

CC ratio <1 in children (6 months to 5 years)	Under-nutrition
CC ratio > Head Circumference for children (1 year to 5 years)	Protein energy malnutrition

Source: WHO 2006

This table represents whether the child is undernourished or malnourished. All these anthropometric indicators are used for the assessment of nutritional status, to determine the involvement or to enroll children to an involvement program i.e., the treatment package and then to discharge them from a program. If you got to know the trick to use all the indicators then, planning an effective intervention will be easy.

Similarly, table below illustrates the use of indicators for individuals and children who are underweight, or suffering from wasting and malnutrition on the basis of weight and height of children relative to their age.

Specific cut offs of BMI in Kg/m^2	Nutritional status
>40.0	Very Obese
30.0-40.0	Obese
25-29.9	Overweight
18.5-24.9	Normal
17-18.49	Mild chronic energy deficiency
16-16.9	Moderate chronic energy deficiency
<16.0	Severe chronic energy deficiency

Source: WHO 2006

If an adult is having BMI < 16 Kg/m^2, then he/she cannot perform a vigorous physical activity or exercise because of their low energy storage. Moreover, they will be more prone or susceptible to infections/diseases due to their low immunity.

Dietary Methods

It is important to identify the energy and nutrient requirement by studying the changes in body growth and maturation. Nutrition and the dietary practices pose a major influence on the development of an individual from infancy to old age. As we all know, a sufficient amount of food intake and nutrient (i.e., the basic nutrients such as proteins, fats, vitamins, carbohydrates, and minerals) is important for a normal growth (American Dietetic Association 2005). Taking inadequate and improper nutrition at any phase of life affects the body adversely. Because of not having sufficient

diet, various communities are suffering from several diseases – over nutrition in adults (majorly in old aged individuals), and under-nutrition in infants, children, and in women. Anthropometric assessment is one of the most common approach to determine the nutritional status of a population because of its ease in comparison to other methods, reproducibility, and obtainability of standards on the basis of normal population for the purpose of comparison and forming association between clinical illnesses and abnormal measurements.

Genetic and environmental factors involving the dietary intake influences the height. Stunting reflects the cumulative impact of under nutrition in the past.

To assess the dietary methods for determining the nutritional status, one should always include the analysis of past or current food intakes, or the nutrient consumption by an individual or a group of population. A questionnaire is prepared in which you can ask about the family, (mother or the child) members dietary history like what have eaten over the past 24 hours. Then, after recording all the data, calculate the dietary diversity score (Kapoor et al. 2012; Popkin 2002; WHO 1966).

Dietary Diversity- It is measured by the number of food groups which are consumed over a period of 24 hours i.e., reference period. Usually, there are six type of food groups which are required by our body on a daily basis.

Requirement of Nutrients at Different Stages of Life

It is very important to consume healthy food at every stage of life. Most importantly, a pregnant woman should have a good nutritional intake that helps both: the mother and the fetus. The adequate supply of nutrients ensure that the baby grow well in infancy time and after that as well. At the time of pregnancy, a women's requirements for certain nutrients increases in comparison to other and lack of those nutrients in her diet results in the low body weight. In the 2nd and 3rd trimester, pregnant ladies must have a good intake of calories and nutrients (WHO 2010).

Dietary History

The data about the history of dietary practices can be collected from individual/or families depending on their requirements. This method is of prime importance as nutritionists have reported that nutrition plays a vital role in the incidence of obesity, heart diseases and diabetes. **Dietary surveys**, are used in estimating the population and assessments of an individual, which is defined as the planned and a systematic study of the dietary consumption of individuals/population or communities. The methods can be both quantitative and qualitative.

The qualitative method includes the use of the food pyramid as discussed above to predict the requirements of food and its serving and intake, whereas the quantitative method evaluates the amount of energy and particular nutrients required for each food by using the tables of food consumptions. These kinds of surveys are increasing in the nutritional epidemiology areas, clinical assessment, and population surveillance. Surveys are quite advantageous such as they are not that expensive, comparatively easy and objective.

Types of dietary surveys

- ✓ Twenty-four-hour recall
- ✓ Weight intake

- ✓ Food frequency questionnaire
- ✓ Food diary
- ✓ Dietary history

Twenty-Four-Hour Recall: In this method, all the food articles are recorded which are consumed during the 24 hours and is used in wide scale nutritional surveys. This method involves the interview or questionnaire where the participant is asked to recall and is required to describe his/her food consumption in detail during the last twenty-four hours.

One of the most widely preferred participant for this method is housewife because she generally knows everything about the dietary practices of her family members. The investigator questions her to remember the type and amount of food intake, how the food is prepared and in what proportion the food is getting distributed to family members. Some of the measuring cylinders in the kitchen such as glasses, cups, spoons and bowls are used to help the participants in recalling the details.

This method has various advantages which are:

- ❖ Inexpensive
- ❖ Quick and easy
- ❖ Depends on short-term memory

The 24-hour recall method should be repeated two to three times where the individual who is being interviewed may be telling the truth is definite or not.

Weighed Intake Method: This method requires the involvement of investigator, when the subject is consuming food and the amounts of food are weighed before, during and after serving. The amount of food is also measured that is not eaten by the subject i.e., left-over food. Then the difference is calculated between the amounts of food that is served and not consumed that gives the amount of food that is actually consumed by the individual. One of the advantages of this method is its intensiveness whereas the disadvantage is that it is time consuming.

Food Frequency Questionnaire: This method is used to collect information about the long-term dietary practices. Individual is allowed to complete the questionnaire by themselves and then the filled form is sent to the investigator. In India, it is generally advisable to fill all the questions by the investigator by interviewing the subjects where the subject is asked about how often he/she consumes special food items. The responses are standardized so that the subject is only required to tick mark the correct answer. The frequency of eating food items is generally calculated as week/fortnight/month. The list of food should not exceed 150 items. The main merit of this approach is that this method is quick and inexpensive and also involves the coverage of more respondents.

Food Diary : Food diary is required to keep the records in a documented form about the dietary practices such as what all food and beverages are being consumed by the subject over a certain period of time. A time period of about 1 week can be used in the diary to predict the dietary intake. The method is reliable as sufficient number of days is covered by each subject. The subjects also take interest in filling up the diary.

The main disadvantage is that individuals are sometimes not able to estimate the quantity of food consumed accurately. The subject concerned can also be illiterate. Moreover, diary making can be a cumbersome process.

Dietary History : In this, the dietary practices are recorded of the participants over a longer period of time. The investigator obtains a retrospective estimate of the food intake using this method. The time duration covered is 3 months to one year. The information is recorded either through interviews and/or questionnaires addressed to the subject. This method is not used in large scale epidemiological surveys.

1.3.1.2 BLOOD GROUPS

INTRODUCTION

Blood groups are blood systems containing red blood cell (RBC) antigens which determine the blood groups. These RBC antigens are encoded by genes. Most of the genes are housed on autosomes and few are located on X and Y chromosomes. Blood type is a specific pattern of reaction to the testing antisera in a particular blood group system (Mitra et al. 2014). The blood group antigens are either polysaccharides or proteins. As of now 38 blood group systems are known in humans according to International society of Blood Transfusion (www.isbtweb.org). Blood group typing is done for safe transfusions of blood components (Red blood cell, plasma and its products (albumin, immunoglobulins and coagulation factors) and platelets) in different clinical entities, to prevent adverse immunoreactions in the blood component transfused patients, to predict and confirm haemolytic disease in the new born, studying evolutionary relationships among human populations, to resolve paternity disputes and for identification of suspects if blood or its components found at the scene of a crime. Of the known blood groups in humans, ABO, Rh, MNS, Kell, Kidd, P, Duffy, Lutheran, and Lewis are considered significant because of their association with adverse transfusion reactions and diseases of the foetus and newborns (Lamba et al. 2013). Here, ABO, Rh and MNS blood group systems are included for the demonstration of phenotyping.

ABO blood group system is divided into four main blood groups namely A, B, AB and O. ABO blood group contains 3 alleles such as A, B, and O, and these are encoded by ABO gene (alpha 1-3-N-acetylgalactosaminyl transferase and alpha 1-3-galactosyl transferase) located on chromosome 9. The A, B, and O alleles determine the antigens such as A, B, and H. The H antigen is present on the O blood group. Subtypes of ABO blood group includes: A (A1, A2, Ax, Aint), B (B1, B2, B3 and B4), AB (A1B and A2B) and O (O1, O2, O3, O4, O5 and O6) are found. Rh blood group contains 55 antigens and encoded by two genes RHD and RHCE which are located on chromosome 1. MNS system reported 49 antigens encoded by two genes GYPA and GYPA housed on chromosome 4. (https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=1).

DETERMINATION OF PHENOTYPING OF BLOOD GROUPS (A1, A2, B, O, M, N and Rh)

For determination of phenotyping of the blood groups, blood sample is to be collected. Then the determination of A1, A2, B, O, M, N and Rh blood groups is done in four steps. They are, collection of venous blood, separation of plasma, preparation of 3% red blood cell suspension and Phenotyping of A1, A2, B, O, M, N, Rh (D1, D2, C,c,E and e) blood groups.

Collection of Venous Blood

Clearance from the ethics committee of the institute and consent of the participant may be obtained before collecting the blood sample.

Materials Required: Gloves, Tourniquet, 70% alcohol, cotton, disposable syringe (5mL), 5 ml falcon tube (10 numbers), tube stand, anticoagulants (Ethylene diamine tetra acetic acid (EDTA) 2mg/ml, sodium citrate (3.2%) or Heparin (12-30 IU/ml)).

Procedure: The person who collects the blood should wear gloves to maintain sterility. Tourniquet is fixed on the upper arm of the participant (Figure 2.1). The area of median cubital vein is cleaned with a swab dipped into the alcohol (70%) and allow to dry for few seconds. The median cubital vein (Figure 2.2) is palpitated with a finger. Using disposable the syringe needle the median cubital vein is punctured, blood is drawn into the syringe (Figure 2.3), after filling 75% of the syringe, the syringe needle is slowly removed from the cubital vein. After removing the needle, the needle is detached from the syringe and the blood is slowly released into the falcon tube (Figure 2.4) filled with either of the anticoagulant (given in the material section) through the walls and the tube cap is fixed. The released blood is gently mixed with anticoagulant by rolling the falcon or glass tube on the palm 5 to 6 times and later kept in the tube stand. If storage is required the tube can be stored at 2-4°C in the refrigerator for one day. Following this procedure blood samples from ten subjects are drawn.

Fig. 8 : Fixing of the Tourniquet

Source:https://www.indiamart.com/proddetail/tourniquet-velcro 7366497755.html

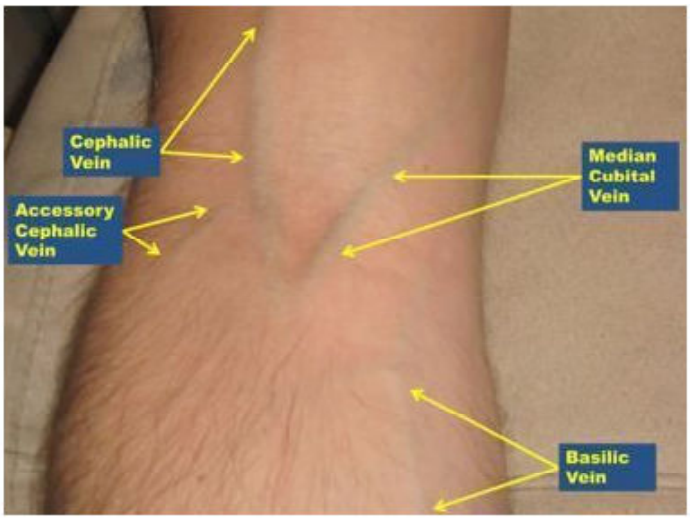


Fig. 9 : Median Cubital Vein

Source: https://www.anatomynote.com/human-anatomy/blood-supplement/cephalic-vein-accessory-cephalic-vein-median-cubital-vein-anatomical-landmark/

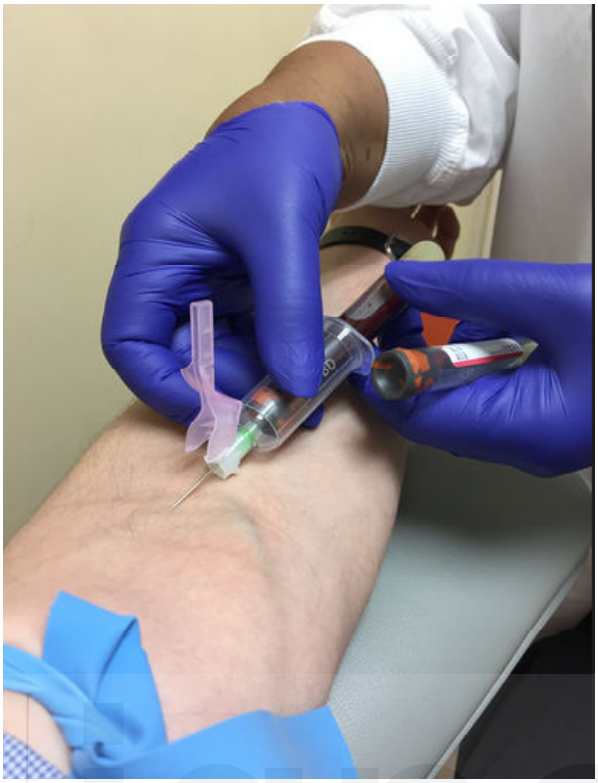


Fig. 10 : Venous Blood Collection
Source: https://en.wikipedia.org/wiki/Venipuncture

Fig. 11 : Falcon Tube
Source: https://us.ivfstore.com/products/falcon-14ml-test-tubes?variant=30229568258125)

Separation of Plasma

Material Required: Micropipette (1ml and 100 microliter), micropipette tips (1ml and 100 microliter)

Plasma is a cell free supernatant formed after the centrifugation of anticoagulated blood (anticoagulant is a substance that prevent the clotting of the blood). The blood sample collected is centrifuged in centrifuge at 1000 revolutions per minute (rpm) at room temperature. The supernatants formed in the 10 tubes are removed with a micropipette tip and dispensed into the labelled 5 ml falcon tube for usage in reverse blood grouping.

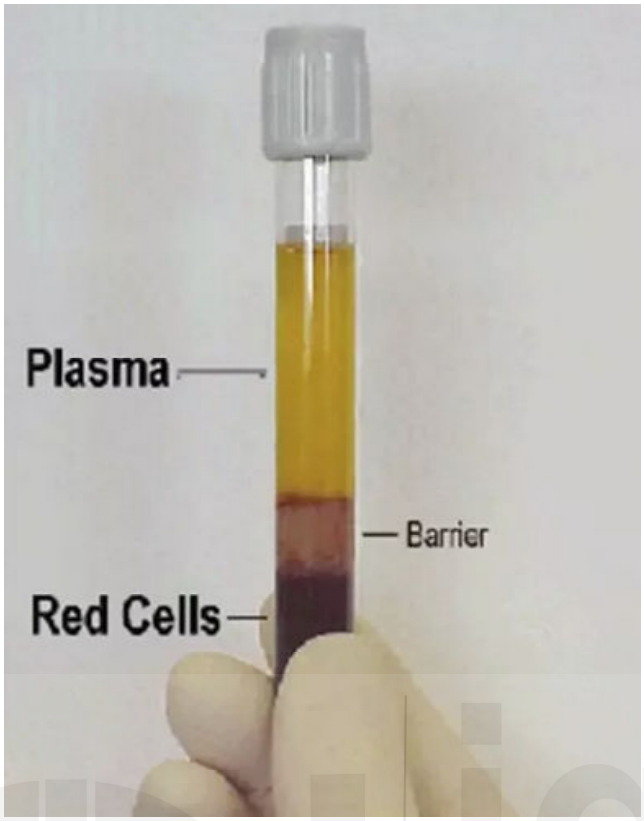


Fig. 12 : Separated Plasma

Source: https://www.quora.com/What-are-the-blood-plasma-components

Preparation of 3% Red Blood Cell Suspension

After separation of plasma from the red blood cells (RBC) the falcon tube, the RBC present in suspension is washed by adding 3.5 ml of 0.9% saline and centrifuged at 2500 rpm for 3 minutes and the supernatant is removed with micropipette tips. This procedure is repeated till the clear supernatant appears.

Materials Required

Sodium chloride (laboratory grade), double distilled water, micropipette (1ml), micropipette tips (1ml), and benchtop /laboratory/clinical centrifuge.

Preparation of 0.9% saline (weight/volume)

For 100 ml 0.9% saline, 100 ml of double distilled water and 900 mg of sodium chloride are added.

Preparation of 3% red blood cell suspension

For 2ml of 3% (volume/volume) red blood cell suspension, 1940 microliters of 0.9% saline and 60 microliters of RBC suspension are added.

Phenotyping of A1, A2, B, O, M, N, Rh (D1, D2, C, c, E and e) Blood Groups

Phenotyping of blood groups are carried out using slide or porcelain tile /microplate/ test tubes. Test tube using has several advantages such as hygienic, detecting weak antigens and antibodies, sensitivity to slide method, and preventing the drying of contents. In this module, phenotyping of blood groups is described using test tube.

Blood group phenotyping is done by forward or reverse methods. In forward method, the antigen on red blood cells are detected using the corresponding commercial antisera while the reverse typing involves detecting antibodies in the serum of the participants using reagent RBC coated with antigens. Reverse typing is done to confirm the results of forward typing and mostly performed for ABO blood grouping. In the case of Rh blood group, in addition to forward typing, weaker D antigen test is carried out. (Guidance manual on ABO and Rh blood grouping (2013).

Principle: Antibodies in antisera bind with the antigen on RBC in forward and antibodies in participant/patient serum bind with the antigen of the reagent RBC in reverse typing, in both cases leads to causing antigen- antibody reaction which appear as red blood cell (RBC) agglutination.

Forward Blood Grouping

Materials Required: Microcentrifuge tubes (1ml) (n=140), 3% RBC suspension, antisera (A, A1, B, H, D1, D2,C,c,E,e,M,N,S and s), Micropipette (100 microliters) and Micropipette tips (100 microliters) and Minicentrifuge.

Procedure: Fourteen 1 ml microcentrifuge tubes (n=14) are labelled as A1, A2, B, H, D1, D2, C,c,E,e,M,N,S and s for each of the ten participants (total n=140). Reagents are generally stored in the refrigerator till usage. These reagents are allowed to reach room temperature before phenotyping. Both antisera (A, A1, B, H, D (D1& D2), C,c,E,e,M,N,S and s) and 3% RBC suspension are added as shown in the following table 2.1. Gently tap the tubes if clumping is observed in any one of the microcentrifuge tubes, it indicates the presence of the corresponding antigen. In the case of Rh and MN blood groups, the mixture of antisera and 3% RBC suspension is recommended for centrifugation at 1000 rpm for 1 min. Positive and negative control must be run for each phenotyping. They are either can be supplied by manufacturer or RBC of known patients can be as used as the positive or negative control. The results of the blood group phenotyping results can be interpreted following 2.2a-c tables.

Table 1: The amount of antisera and 3% RBC required for forward phenotyping of blood groups

Details	A1	A2	B	O	D1	D2	C	c	E	e	M	N	S	s
Antisera	100µl	100µl	100µl	100µl	100µl	100µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl
3%RBC	100µl	100µl	100µl	100µl	100µl	100µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl

Detection of Weak D Antigen: If a subject/patient is Rh (D)- there is a possibility that he/she may be weak D (Du) positive. To confirm if the patient/subject is a carrier of weak (DU) positive, indirect agglutination test is performed.

Materials required: 0.9% saline, Minicentrifuge, Micropipette(1ml), Micropipette tips(1ml), antihuman globin, Rh control supplied by the manufacturer.

Procedure: All Rh (D)- tubes are incubated at 37^0 C for 30 minutes, and centrifuged at 1000 rpm for 1 minute. If agglutination occurs in microcentrifuge tubes, the subject/ patient is considered as Rh(D) positive. If no agglutination is noticed, cells are washed with 0.9% saline three times by centrifuging at 1000rpm for 1 minute and removing

the supernatant. To the washed cells, 200 microlitres of antihuman globin is added. Centrifuged at 1000 rpm for 1 minute. The microcentrifuge tubes are gently shaken and observe the result under the light. If agglutination occurs the subject is considered a carrier of weak D variant (Rh (D) positive) and if no agglutination, subjects are determined as Rh (D) negative.

Table 2a: Interpretation of A1, A2, B, and O phenotyping results

Anti A	Anti-A1	Anti B	Result
+	-	-	A2
+	+	-	A1
-	-	+	B
-	-	-	O

Table 2b: Interpretation of Rh blood group results following NIB, India manual

Rh(D)+						
Antigens					**Fisher & Race**	**Weiner & Wexler**
D	**C**	**c**	**E**	**e**	**Results**	
+	+	0	0	+	DCe/DCe	R1R1
+	0	+	+	0	DcE/DcE	R2R2
+	0	+	0	+	Dce/dce	R0r
+	+	0	+	0	DCE/DCE	RzRz
+	+	+	0	+	DCe/dce	R1r
+	0	+	+	+	DcE/dce	R2r
+	+	0	+	+	DCe/DCE	R1Rz
+	+	+	+	0	DcE/DCE	R2Rz
+	+	+	+	+	DCe/DcE	R1R2
			Rh(D)-			
0	+	0	0	+	dCe/dCe	r'r'
0	0	+	+	0	dcE/dcE	r" r"
0	0	+	0	+	dcc/dce	rr
0	+	0	+	0	dCE/dCE	ryry
0	+	+	0	+	dCe/dce	r'r
0	0	+	+	+	dcE/dce	r"r
0	+	0	+	+	dCe/dCE	r'ry
0	+	+	+	0	dcE/dCE	r"ry
0	+	+	+	+	dCe/dcE	r' r"

Table 2c: Interpretation of MNSs blood group results following NIJ, USA manual

Anti-M	Anti-N	Anti-S	Anti-s	Result
+	+	+	+	**MNSs**
+	+	+	-------	**MNS**
+	-	+	-	**MS**
+	-	+	+	**MSs**
+	-	-	+	**Ms**
+	+	-	+	**MNs**
-	+	+	-	**NS**
-	+	+	+	**NSs**
-	+	-	+	**Ns**

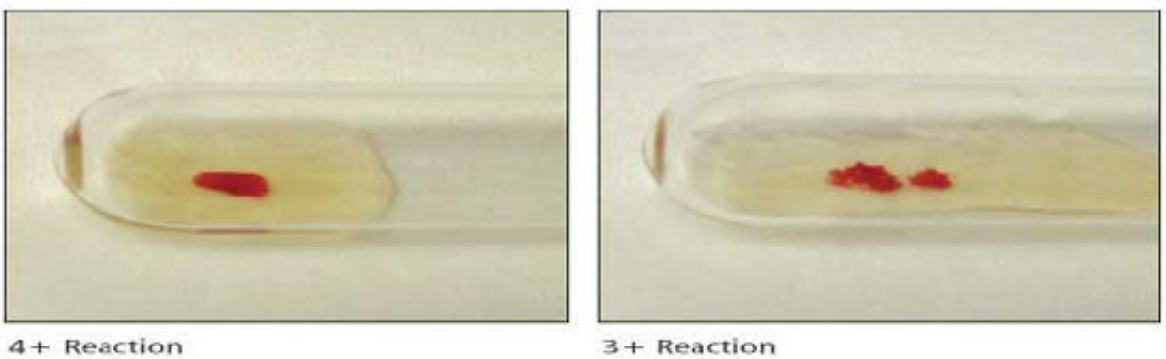
Reverse Typing of Blood Groups

Materials Required: Reagent RBC cells (A1, A2, B, O, D1, D2, C, c, E, e, M, N, S, s), Serum of ten subjects, Micropipette (100 microliter), Microtips (50 & 100 microliters), Microcentrifuge tubes (1ml), Microcentrifuge tube stand and Mini centrifuge.

Procedure: The serum of ten subjects and reagent RBC (coated with antigens) are mixed in the following volumes. Microcentrifuge tubes kept in microcentrifuge tube stand are gently shaken and centrifuged at 1000rpm for 1 minute. After the microcentrifuge tubes, the tubes are examined under the light. The agglutinations are graded as shown in Figure 2.6.

Table 3: **Reverse typing of blood groups**

Details	A1	A2	B	O	D1	D2	C	c	E	E	M	N	S	s
Serum	100µl	100µl	100µl	100µl	100µl	100µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl
Reagent cells	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl	50µl



4+ Reaction 3+ Reaction

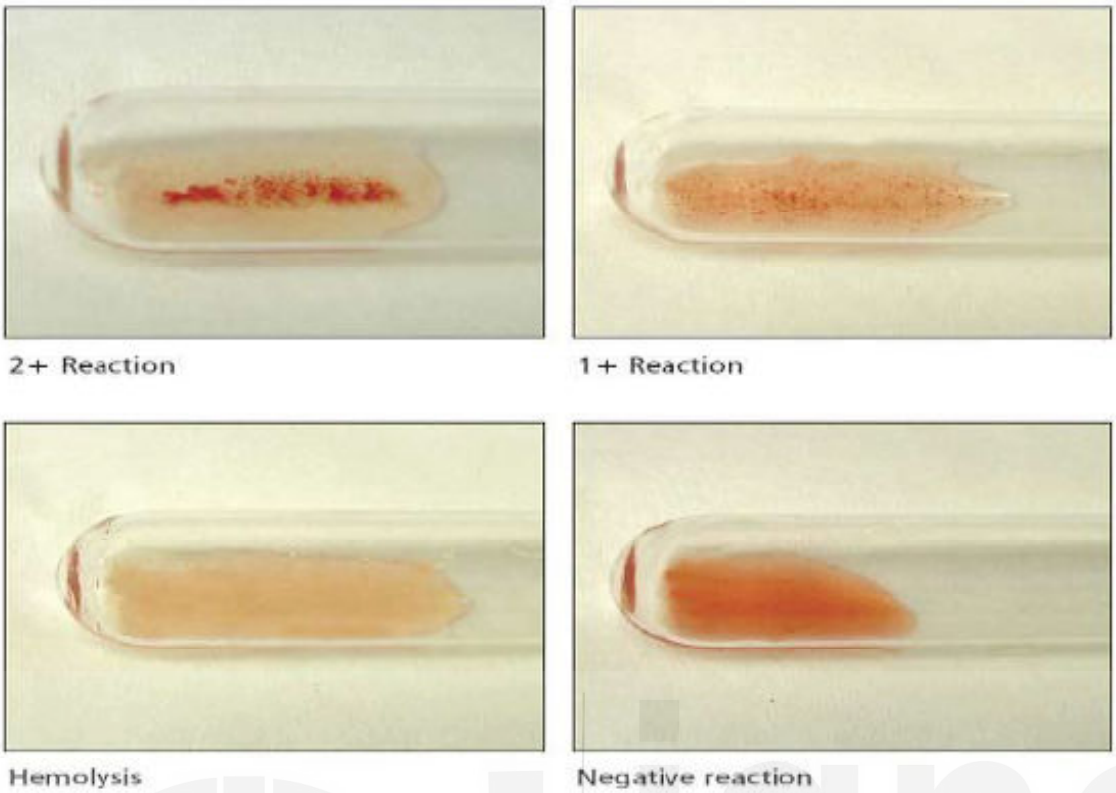


Fig. 13 : Grading of agglutination in A1, A2, B & O blood group as per NIB manual

Grades in agglutination: 4+: 1 big clump; 3+: 1 or 2 clumps; 2+: small clumps with clear supernatant;1+: small clumps with turbid supernatant; 0: smooth suspension and H: haemolysis (NIB, Guidance manual, 2013)

1.3.1.3 DERMATOGLYPHICS

INTRODUCTION

Dermatoglyphics is the study of the epidermal ridge patterns of the skin of the fingers, palms, toes and soles. Dermatoglyphics is derived from two Greek words ('Derma' means skin and 'Glyphe' means carve). The term Dermatoglyphics was first coined by Cummins and Midlo in the year 1926. Dermatoglyphics is considered to be one of the important as well as interesting branches of highly developed science and technology. Every individual possesses distinct features of ridges and their pattern in fingers, palms and soles.

The ridge patterns are stable throughout life and are not modified by environmental factors. The patterns are unique to each individual. Because of these qualities it plays a very important role in the personal identification, crime detection, twin diagnosis, racial variation and have applied values in various diseases and syndromes. Further these features are not affected by any kind of diet or infection and thus free from any external influences because their formation is determined not only by genetics but also by environmental factors. They are of considerable interest as a means of identification. The ridge configuration present on the palm is called Palmar Dermatoglyphics and the ridge configuration present on the fingers is called Finger Dermatoglyphics. The epidermal ridges form definite local design on the terminal segment (phalanges) of digits and also on the palm and toes.

FUNDAMENTAL PRINCIPLES OF FINGERPRINTS

Primarily, it involves the study of patterns present on different region of the fingers, palms, soles and toes but it has traditionally been the most important aspect of dermatoglyphics analyses. The primary features of classification system are worked out during late 19th century but were integrated into unified systems by Cummins and Midol from different pioneering work done in the field which has come to know the following fundamental biological principles of finger prints.

1. Epidermal ridges are very highly variable in all the individuals that this characteristic even in small region of palm, finger or sole are not duplicated either in another region or in different persons.
2. The detailed configurations of individual ridges are permanent and unchanging throughout life.
3. The several configuration types among the individuals are within limits, which follows for systematic characters.
4. Fingerprints are impression of frictional ridge present and the actual phalanges of finger and thumb. A fingerprint impression thus obtained is a reverse of the actual pattern on the skin surface. It is very true that each fingerprint is different from the other. Yet it is true that all finger print having common characteristics among themselves, which make classification possible. The common character that makes up the pattern is pattern type, type line, delta and core.

The characteristics of Fingerprints are given below.

A) Pattern Area

It is the part of the loop or whorl which appears in the core, deltas, and ridges that we are concerned with classifying. It is present in all patterns of course but in most arches it is indefinable. Type lines enclose the pattern area of loops and whorls.

B) Type Lines

Type lines are ridges that determine the pattern area of the loop and whorls. The arch lacks presence of type line. These lines may be defined as two inner most ridges, which start parallel, diverge and surround the pattern area. Type lines are not always two continuous ridges in fact, they are more often found to be broken. It is important to know the distinction between divergence and bifurcation. A bifurcation is the dividing or working of a single ridge into two or more branches while a divergence is the spreading partly of two ridges in different direction which had been running parallel or nearly with in the pattern areas of loops and whorls are enclosed the focal points which are important for identification and classification of the pattern. These points are learned as Delta (Triradius) and core.

C) Delta/ Triradius

The word Delta is the fourth letter of the Greek alphabet and corresponds to the English letter D. As this Greek Letter is triangular in shape hence it is applied

to fingerprint pattern. There is great resemblance between the delta in Geography and delta in fingerprint pattern. In fingerprint studies, Delta or Triradius is formed when a ridge bifurcates and the two arms of bifurcating ridge diverge or when two adjacent ridges running side by side diverged causing interspace within which the pattern lies. The triangular plot formed by two diverging ridges. The first ridge formed by two diverging ridges and ridge in front of them with in the interspaces as the base is called Delta or triradius. The delta is the point from which ridge counting is to be started in the loop pattern, the ridges intervening between the delta and core and carved the loop pattern **possess** a single delta while whorl pattern **possesses** two. Arches do not have delta formation.

D) Core

Core is the central point of the pattern. The type of core varies according to the type of pattern. In loop pattern they may consist of stable or an even or uneven number of ridges not joined together which we are called as 'rods'. The core is placed upon the innermost sufficient recurve core which is absent in arches. In core of whorl pattern, the centre of first ring, elliptical or circular is taken as core point. In case of spiral, the point from which the spiral begins to revolve is taken as core point. The core is considered very important because it is the landmark for ridge counting by the connection of triradius in a straight line.

CLASSIFICATION OF FINGERPRINTS

Various researchers have proposed, schemes of pattern type in different methods. Some of the considerable methods of classification work were done by Sir Galton and Henry. Francis Galton (1892) for the first time distinguished and classified three main pattern types on the ball for fingers. They are whorl, loop, and arch. However, Henry (1900) proposed a four fold classification. He classified the type as arch, loop, whorl and composite. The Henry system is more widely used than any other and it is moreover the foundation of the modified system.

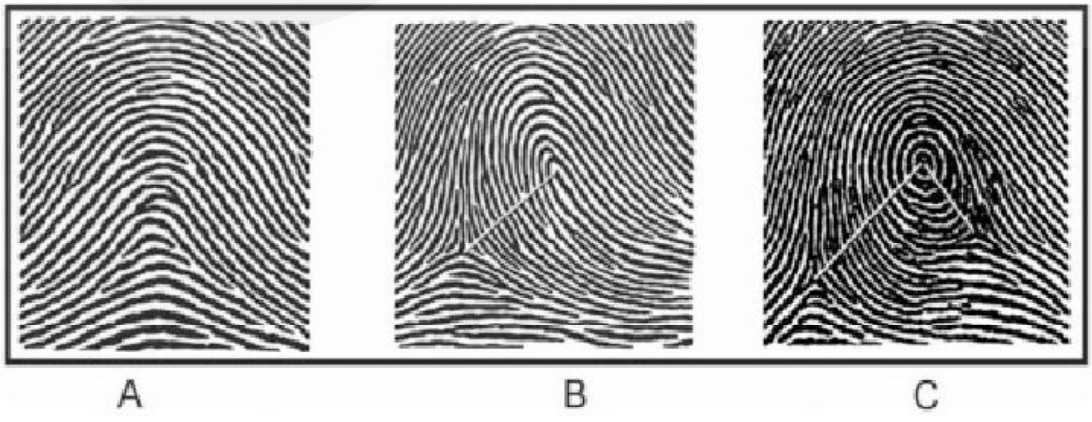


Fig. 14 : Fingertip patterns representing (A) arch pattern with neither a core nor a delta point, (B) 'loop' pattern containing one core and one delta point (C) 'whorl' pattern with one core and two delta points

Source: Holt SB. Br Med Bull 1961;17:247-50

These three basic types are subdivided into nine subtypes for the purpose of classification:

Arch

Plain Arch
Tented Arch

Loop

Radial Loop
Ulnar Loop

Whorl

Plain/True Whorl

Composite

Central Pocket Loop
Lateral Pocket Loop
Twin Loop
Accidentals

Arch

An arch is the simplest pattern referred to as pattern of less configuration. They are characterised by slight rise (elevation) in the ridges, which enter on one side of finger print pattern and exit on the opposite side. The Arch is of two subtypes:

Plain Arch (A)

It is simple of all the fingerprint patterns. The plain arch ridges enter on one side of the impression and flow or tend to flow out on the other side with a slight rise or wave in centre. It has no Triradius and core.

Tented Arch (T)

It is the one in which most of the ridges enter on one side and flow upon the other side making the sufficient recurve. Tented arch appears to have triradius near the mid axis of the finger towards the proximal end. The erect radiant is associated with abrupt elevation of transversely coursing ridges forming the "tent" which give the name to pattern.

Fig. 15 : Plain Arch **Tented Arch**

Source: https://www.crime-scene- investigator.net/fbiscienceoffingerprints.html

Loop

It is one of the most common patterns found in fingerprint. A Loop is the type of fingerprint pattern in which one or more ridge enter on either side of the impression, recurve, touch or pass on imaginary lines drawn from delta to core terminate or lend to terminate towards the same side where such ridge entered. It has only one delta. Loops are subdivided into two main types:

Radial Loop (RL)

It is so called because ridge flow or terminate in the direction of radius bone of forearm. In case of right hand finger, ridges slant toward left and in left hand finger, the slant is toward right side.

Ulnar Loop (UL)

It is so called because the ridges flow or terminate in the direction of ulna bone of the forearm. In case of right hand finger, the ridges slant toward right side and for left hand finger, ridges slant towards left side.

Whorl (W)

A whorl is characterized by a circular pattern having one or more ridges revolve around the core making a complete circle, at least two deltas are present with in a **recurve** in front of each whorl type. It is the most complex of all the three types. According to Henry there are two kinds of whorl i.e. true whorl & composite whorl.

Plain/True Whorl

True whorl possesses two triradius and at least one ridge making a complete circuit which may be spiral, oval, circular or any variant of the circle. A frequent configuration is a succession of rings or eclipse. If this ring happens to be concentric then such a whorl is called as whorl concentric circle. Another common arrangement is spiral course around the core which is either clockwise or anticlockwise directions. This pattern is called spiral whorl when the ridges form one spiral around the core, it is called single spiral. If there are two spirals distinct in nature with two different cores, it is called as whorl double spiral.

Composite Pattern

Composite patterns are compound pattern in which two or more designs each conforming to general aspect of one of the simpler types combined in pattern area. Two or more triradius are present. There are four main type of composite recognized:

Central Pocket Loop

Central pocket loop is a composite pattern in which most of the ridges take the form of a loop. It is essentially a whorl of reduced size lying in the interior of pattern area, which is constructed mainly as a loop, the central pocket loop has two deltas. It is a pattern intermediate between a whorl and pure loop.

Lateral Pocket Loop

In a lateral pocket loop, one loop serves as a side pocket to two other pocket to another loop. The pocket is formed by downward bending on one side of ridge of

other loop before they recurve. The ridges about the centre, the lines containing the point of core of loops have their exit on same side of delta.

Twin Loop

In a twin loop there are two distinct loops, one resting upon or encircling the other and the ridges containing the point of core have their exit toward different deltas. According to United States Federal Bureau of Investigation expert, the lateral pocket loop and twinned loop should be consolidated under double loop pattern because of the complexity involved in locating and tracing the loops.

Accidentals

Accidentals are certain composite patterns within the whorl group that occur rarely and formulated purely by chance. The Accidental whorl is a pattern consisting of combination of two different types of patterns excepting plain arch possessing two or more delta formation like whorl and loop, tented arch and loop triple, loops and other bizarre configuration not original to the standard type.

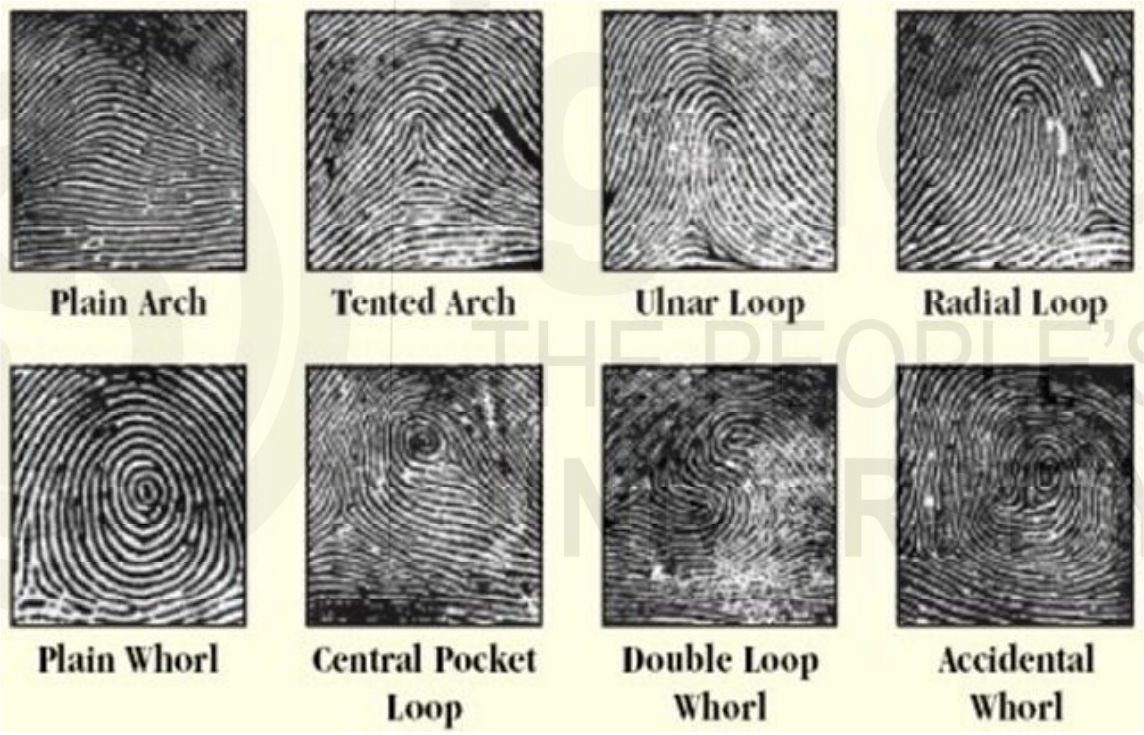


Fig 16 : Different types of Finger Dermatoglyphics

Source: www.viewzone.com

PALMAR DERMATOGLYPHICS

In palm, there are six elevated areas of varying prominence. These are thenar, hypothenar and four interdigital areas namely I, II, III and IV (Figure 3.4). The thenar eminence occupies a large area of the base of the thumb and the hypothenar eminence lies opposite to thenar area and is present in the ulnar portion of the palm. Generally speaking, there are four triradii normally located at the base of digits II, III, IV and V and called a,b,c, and d. A triradius is a meeting point of three opposing systems. Ideally, it subtends three angles of 120Ú. In practice, the angles may range from 90Ú to 180Ú as limiting values.

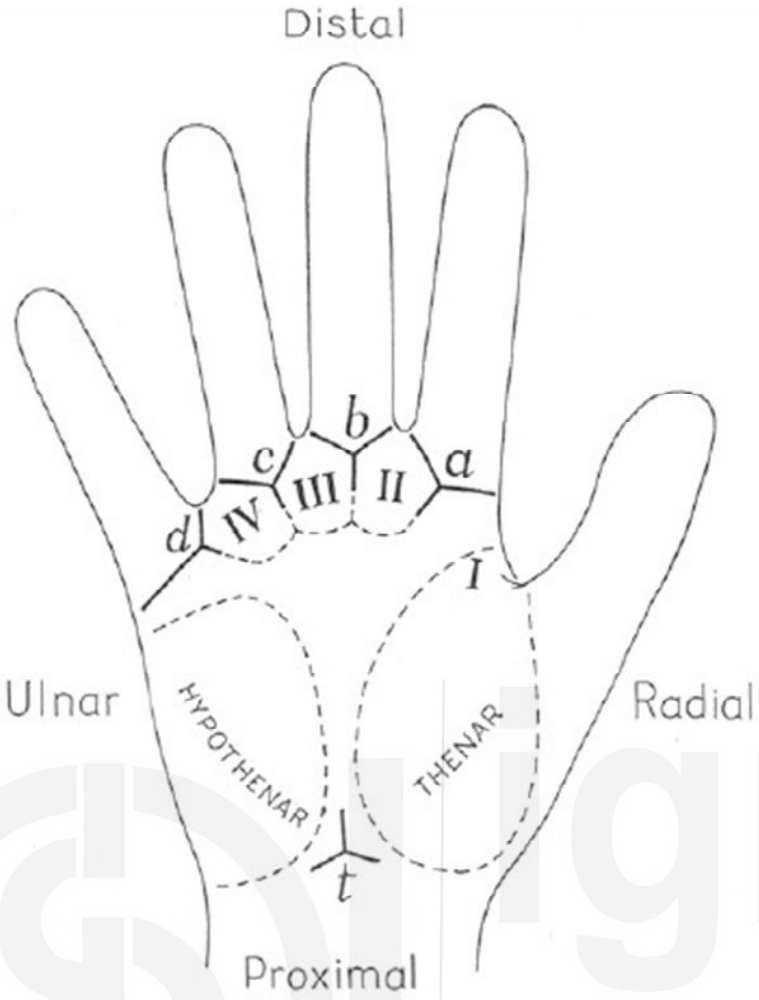


Fig. 17 : Palmar Dermatoglyphics

Source: medind.nic.in

Numbering the Palmar Area and the Main Lines

The margin of the palmar area is divided into 14 points and intervals. The number sequence begins with the proximal part of the thenar eminence. On the radial side of the axial triradius and at the base of the thumb, number 1 is given; this area continues around the proximal, ulnar, distal and radial borders of the palm. Number 2 position is allotted to axial triradius which is a point. The approximate midpoint of the ulnar margin is designated as 4; the digital areas are represented by 6,8,10 and 12. The interval between the points 4 and 6 is numbered 5, which is further divided into 5' which is the proximal half, and 5'' which is the distal half. Here the rule is that, each of the marginal areas of the palm are numbered following the principle that points are given even numbers, 2, 4,6, 8,10 and 12 beginning as mentioned above from the base of the palm behind the thumb (No.1), moving from ulnar to radial side, and odd numbers 1,3,5,7,9,11 and 13 are given to intermediate areas as shown in Figure 3.5. It is the radiants of the triradius that traces the lines in the form of loops and whorls which are called as the Type line. One can identify the pattern on the basis of these lines. The longest radiant of digital triradius is the main line, hence the designation of main lines as D, C, B, A and T lines (Figure 3.5).

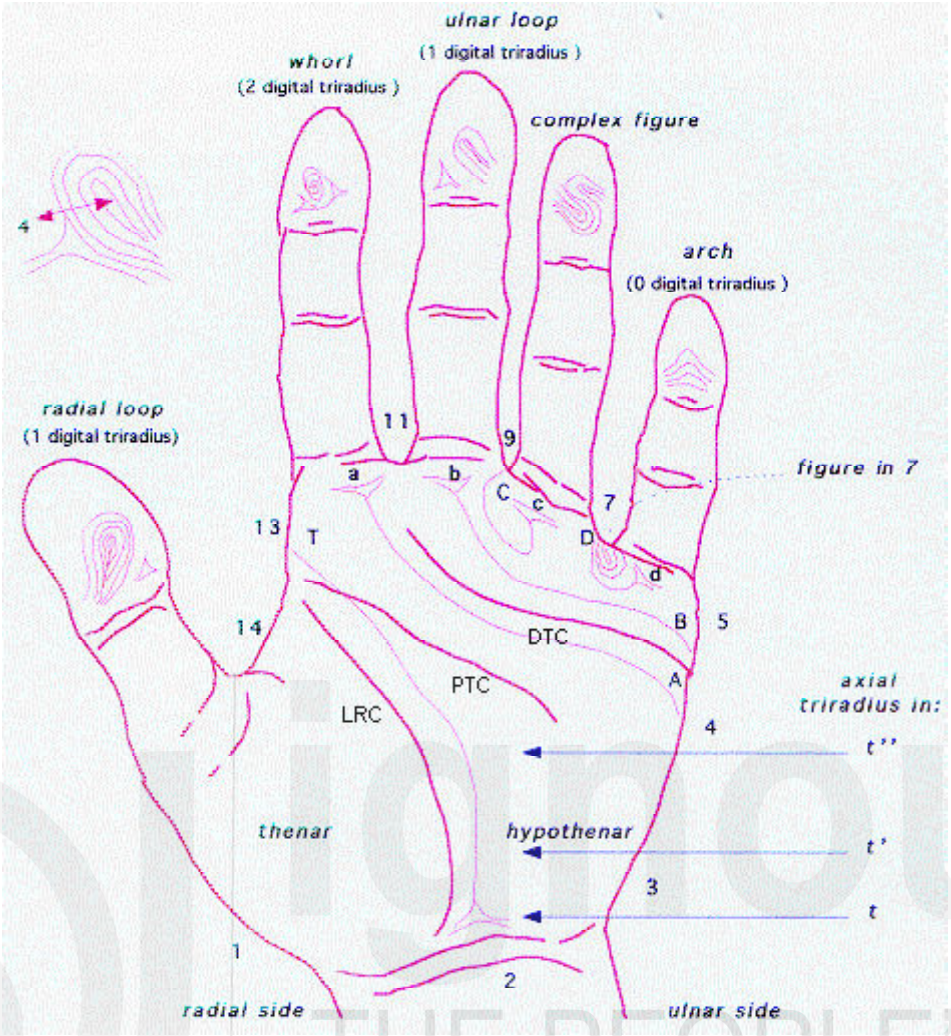


Fig. 18 : Formulation of the Main Lines

Source: atlasgeneticsoncology.org

Pattern Intensity Index: The Pattern Intensity Index on fingers or toes is an estimation of triradii per finger or toe. It is to be noted that a whorl consists of two triradii, a loop has one, and arch has none. "The value of pattern intensity may be stated either as the number triradii per individual or as the average number of triradii per finger". The number of triradii is approximated by adding the frequency of loops to twice the frequency of whorls, the total being divided by the number of individuals when the frequencies are in absolute numbers, or by ten for percent frequencies." (Cummins and Midlo, (1962).

COLLECTION OF FINGER AND PALM PRINTS

Material used: Magnifying Glass; Inking Plate (Metal or ¼" Glass) 6" wide x 14" long; Card Holder; Hardwood stand 2' length x 1' height and width; Cleaning Fluid or CreamPaper Towels; RollerInking Plate Cleanser; Printer Ink/Stamp Pad Ink (heavy black paste),Note: Printing ink or ordinary ink or any other coloured inks are not advisedfor fingerprinting work. The reason being they are too light, thin and do not dry quickly.

Finger Print Method

a) Clean the hand of the participant and dry with clean towel.

b) Smear the ink over the fingers.

c) Hold the terminal knuckle of the finger and roll it from radial to ulnar side. The thumb should be rolled from the opposite side.

d) The ideal finger prints should be square in shape. The triradii should be visible in the print. One triradius for loop, two triradius for whorl and three triradius on a super whorl.

Palmar Print Method

a) Hold the wrist of the participant and place the hand on the inked slab uniformly.

b) Lift it up slowly from the ulnar end of the palm.

c) Place the palm on the paper.

d) Press the interdigital areas and hollow in the centre of the palm.

e) Remove the palm from the paper slowly without any jerk pressing the centre of the palm.

f) Roll the palm on the ulnar end.

g) Take care that there is uniformity in the print including that of the hollow in the centre and ulnar end of the palm

Fig. 19 : Collection of Finger Prints
Source: https://www.alignable.com/corona-ca/rivera-income-tax-notary/ink-card-fingerprinting

FINGERPRINTS AND PERSONAL IDENTIFICATION

One of the major goals of the criminal and civil investigation processes is to able to identify people, especially victims and suspects. One of the best known and accepted methods of personal identification is by matching fingerprints and other friction ridges.

Chance Prints

Chance fingerprints are those prints which are found at the scene of crime. Scene of crime prints are of three types:

Visible prints

Plastic Prints

Latent Prints

Visible Prints

Fingerprints which are visible to the naked eye are called as visible prints. They may be produced when colored contaminates are present on the finger of a person and he touches any surface. For example, a blood print, ink print or a paint or dirt print. Finger images of this kind do not require any kind of processing for making them visible. They are simply photographed and sent for comparison with the prints of the suspects. Visible prints do not require any kind of treatment with the fingerprinting powders or chemicals but they are simply photographed with the help of direct light or side lighting and sent for comparison with the prints of the suspects.

Plastic Prints

Plastic prints are formed when the fingers or palm come in contact with a plastic body or a surface such as soap, butter, wax, soft putty, tar, grease, freshly painted surface and other similar material that form a mould of the fingerprint when touched. Plastic impressions do not require any kind of treatment with the fingerprinting powders or chemicals but they are simply photographed with the help of direct light or side lighting and sent for comparison with the prints of the suspects.

Latent Prints

Latent prints are such impressions that are not readily visible to the naked eye. They are hidden or concealed impressions left on various objects by the perpetrator. The papillary ridges of the friction skin is dotted with numerous sweat pores. The function of the pores is to secrete sweat, oily matter, and other secretions in order to keep the skin of the hand smooth and soft. Whenever fingers of palm come in contact with any surface, they leave an invisible impression on the surface of contact due to sweat. This invisible image of fingers and palm is known as latent print. In order to make such images visible, they are required to be treated physically or chemically

DEVELOPMENT OF LATENT PRINTS

Latent prints found at a scene of crime are developed for rendering visibility to them.

Powder method

This method works on the premise that the surface possessing a latent impression has some moisture due to the presence of water content in the sweat. The fingerprint powders, which are available in different colors, like black, grey white, red, yellow etc. stick to the moist surface rendering visibility to the ridges on the surface. The

color of the powder is selected according to the color of the surface to bet the best contrast. The prints thus developed are photographed for the purpose of comparison.

Chemical methods

The use of chemical reagents that react with the organic and inorganic compounds present in the sweat constitutes a simple and effective means of developing latent prints. Perspiration consists of about 99 percent water with traces of inorganic and organic material like sodium chlorides, sulphates, phosphates, carbonates, potassium calcium zinc, glucose, urea, fatty acids, amino acids, lactic acids and many more. All these constitutes about 1 percent of the perspiration

In order to render visibility, the following chemicals are used to develop latent prints:

Iodine fuming method, Silver nitrate method, Ninhydrine method, The cyanoacrylate fuming method, Osmium tetraoxide method, Hydrofluoric acid method, Tannic acid method and Mercuric iodide method.

1.3.2 DATA ANALYSIS, INTERPRETATION AND REPORT WRITING

Once the data collection is over, the process of data analysis and interpretation begins. Spend some time thinking about what excited you the most about your research and how you could best communicate thisto readers. Try arranging your thoughts in an outline. Give yourself time to write a rough draft first that you may improve and/ or redraft. Most well written dissertations take several drafts to end up with a satisfactory end product.

Set the backdrop and introduce the research topic. Describe the area where you went and provide some background on the people with whom you worked. Describe the topics and focus of your research. State your argument (thesis) and original goals or research questions and why you were interested in it. Make sure that your introduction draws the reader in.

Ethnographic field research relies on observation, interaction, and mutual exchange. Describe your methodology. Your main method for collecting data should be participant observation and interviews.

- How did you go about collecting data?
- How did the methods you select help you find and interpret material?
- What problems or challenges did you encounter?
- Did those problems tell you something about the phenomenon you studied, or about your methods?

Provide examples of data you gathered that are relevant to your argument. Make sure you collect enough ethnographic data to be able to argue your thesis.

Is the example representative of what you studied or is it rather unusual?

Does it fit a pattern? Or does it break a pattern?

You can paraphrase or directly quote the interviewees. Where you have multiple people who said similar things, do not repeat what they said. You should group them together and either paraphrase their overall sentiments, or use a direct quote from one of them that is representative of the rest. This should be both descriptive and interpretive. In other words, you want to report what people say, and why they say it. If you have other kind of data, people's personal histories, economic status, age, etc., that you think contribute to why they expressed a certain opinion or idea, you can use it.

Analysis is the process of isolating the constituent parts of a configuration; collected data is identified from the field notes and arranged in a systematic way. What information must be put first, what information to be put next, and what information must be put finally will be judged by the investigator. The data thus arranged becomes meaningful when considered in totality. This totality is the configuration. Each part this configuration may usually appear as a chapter in the write-up or report prepared by the researcher.

Each part deals with a specific aspect of the problem. If the total picture gained after going through the report is considered as a configuration, what has been gained by going through every chapter is a constituent part of the configuration. To put it in another way, the researcher isolates the constituent parts of the totality and presents them in a meaningful manner. It is a very important step and should be carried out properly.

Data analysis needs thorough concentration as you need to make proper notes, assign codes and transfer the raw data into a sheet on which various statistical techniques can be applied. The information obtained through personal notes, interviews and case studies can also be utilised in providing supporting evidence in the report.

Once the data has been analysed, you can proceed to the stage of interpreting the results. Like any science, the discipline of anthropology does more than simply describe specific cultures. Interpreting data, perhaps the most difficult step, involves explaining the findings. The process of interpreting is essentially one of stating what the results show. It is not a routine and mechanical process, but calls for a careful, logical and critical examination of the results obtained after analysis, keeping in view the limitations of the sample chosen, and the tools selected and used in the study.

There is always an element of subjectivity, which should be reduced to the minimum by the researcher while interpreting the results. In the light of interpretation of results, you have to use great care and caution in formulating the conclusions and generalisations. These finals steps in the research work demand critical and logical thinking in summarising the findings of the study and comparing them with the objectives and hypothesis formulated (if any) in the beginning. The generalisations drawn on the basis of research findings should be in agreement with facts and should not conflict with the known laws of nature.

Your writing should be clear and logically consistent.

Having read a lot on your topic you may think that much of the ideas, arguments, issues and terms are obvious; it is essential to assume that your reader does not

know much about the topic. This means instead of assuming something about your topic from common knowledge,you should explain:

- what activities are carried by people,
- who the people are, and
- how it all fits together.

The presentation of the project should be logical and concise, making use of simple common words and sentence structure. The language should be formal and straightforward, avoiding colloquialism or slang. The personal pronouns I, we, you, my, our and us should not be used. Their use should be avoided by the use of such expression as 'the researcher' or 'the investigator'. The use of abbreviations should be avoided in the main text of the project report.

The writing process often takes more time than most people think. So, do not leave the writing until the last few weeks before the submission deadline; instead start writing as soon as possible. It is not necessary to start writing from chapter one. You can begin writing in the middle of a chapter too. Start where your evidence is strongest and your ideas are clear. Prepare an outline of what each chapter of your dissertation will include. This will assist you to plan and organise the writing process. It will also enable you to estimate how long each chapter will take to write, what areas need more work, which information needs to go where.

Break up large amounts of text with headings and subheadings. The more signposts the reader is given, the easier the dissertation will be to navigate and understand.

The chapter scheme of the report should be outlined and the purpose of each chapter is to be stated. Chapter plan or chapterisation will give a tentative plan for writing the report. This exercise will help in completing the dissertation smoothly and in a systematic way. The length of each chapter should be more or less the same.

Each chapter will bear:

- Chapter number
- Chapter title
- Introduction
- Main titles, sub-titles, sub-sub titles
- Conclusion
- Graphics/illustrations etc
- Well presented with proper layout
- Do not fill up chapters with unnecessary tables
- It is not necessary that every chapter should have tables
- Choose only the most important areas for presentation in tabular form
- Rest of the findings can be given in a narrative form

A project report is an outcome of a research work, so while presenting it due care should be taken to systematically arrange the contents of the fieldwork. The following structure is recommended:

- Title of the Dissertation
- Table of Contents
- List of Tables and Photographs or Figures
- Acknowledgements
- Introduction
- Literature Review
- Study Area and People
- Materials and Methods
- Data Analysis and Results (to be presented in chapters or sections or paragraphs)
- Discussion and Conclusion
- References

1.3.3 PRESENTATION OF REFERENCES CITED

You must take care to cite all the sources of information that are not from your first-hand research. Whatever material is important and relevant should be incorporated in the body of the dissertation; needless to say that anything unimportant is to be ignored. How do you cite in the body of the text? Important point is that the citation must be incorporated in the sentence. It should be cited before you put a full stop to a sentence. It can at times be a part of a long quote, coming inside the punctuation. See the examples below to follow:

- When in the text you are referring to one author

  ... Bindon (1994) discussed….

- When the same author has more than one work referred in a single year

  ... Bindon (1994a; 1994b)… for a single authored piece—use a, b, etc.

- When the work is done by two people

  ... Bindon and Crews (1993) discussed ...

  ... is discussed (Bindon and Crews 1993).

- When the work is by three or more people, use et al.

  ... Bindon et al. (1991) discussed ...

  is discussed (Bindon et al. 1991).

- When there is a list of citations involved, they should be arranged in alphabetical order of author's name, then by date (year), separating references by semi-colons or commas.

  ... is discussed by many workers (Bindon 1994; Bindon and Crews 1993; Simons et al. 2011)

List those references that are actually cited in the project report and not the ones which you consulted but did not cite. Author's name must be included in every reference, even if there are multiple publications by the same author or authors. The list of references must be in alphabetical order of the authors' name and multiple sources by the same author or authors should be arranged chronologically. More than one publication by the same author in the same year must be designated a, b, etc. in the order they are encountered in the text and listed in the references in the same order.

Now in the 'References cited' section the following format should be followed for clarity and uniformity:

Journal articles

Austin-Broos, D. 1991. Aesthetics or politics: A choice for anthropology. *Social Analysis,* 29:116-129.

Bindon, J.R. 1994. Some implications of the diet of children in American Samoa. *Collegium Anthropologicum*, 18:7-15.

Bindon, J.R., and Crews, DE. 1993. Changes in some health status characteristics of American Samoan men: A 12 year follow up study. *American Journal of Human Biology*, 5:31-38.

Bindon, J.R., Crews, D.E and Dressler, W.W. 1991. Lifestyle, modernization, and adaptation among Samoans. *Collegium Anthropologicum*, 15:101-110.

(Remember that et al. is strictly not allowed in list of references)

When the citation of an author is both in a journal and a book

Barth, F. 1987. *Cosmologies in the making: A generative approach to cultural variation in inner New Guinea*. Cambridge: Cambridge University Press.

1989. The analysis of culture in complex societies. *Ethnos* 54(3-4):120-142.

Schefold, R. 1972-73. Religious involution: Internal change, and its consequences, in the taboo system of the Mentawaians. *Tropical Man*. 5:46-81.

1973. Religious conceptions on Siberut, Mentawai. *Sumatra Research Bulletin* 2:120-24.

1980. The sacrifices of the Sakuddei (Mentawai Archipelago, Western Indonesia): An attempt at classification. In R.Schefold, W, Schoorl, & J. Tennekes. (Eds.) *Man, meaning, and history: Essays in honour of H.G. Schulte Nordholt*. The Hague: Martinus Nijhoff.

1982a. The efficacious symbol. In E.Schwimmer & P.E. de Josselin de Jong. (Eds.) *Symbolic snthropology in the Netherlands*. The Hague: Martinus Nijhoff.

Chapter in edited volume reference format

Bindon, J.R. 1997. Coming of age of human adaptation studies in Samoa. In S.J., Ulijaszek and R.A. Huss- Ashmore (Eds.). *Human adaptability: Past, present, and future*. New York, Oxford University Press. p 126-156.

Bindon, J.R., and Zansky SM. 1986. Growth and morphology. In P.T., Baker J.M., Hanna, T.S., Baker (Eds.). *The changing Samoans: Behavior and health in transition*. New York: Oxford University Press. p 222-253.

Book reference format

Bachelard, G. 1969. *The poetics of space*. Boston: Beacon Press.

Dressler, W.W. 1991. *Stress and adaptation in the context of culture: Depression in a Southern Black Community*. Albany, NY: SUNY Press.

In edited book

Abu-Lughod, L. 1992. Writing against culture. In R., Fox (Ed.) *Recapturing Anthropology*. Santa Fe: School of American Research.

Website

For a website, the first element would be the individual or registered name (give as much information as possible), Year last updated, Group responsible for the site with their address (if available/applicable), the date site was last updated, the date of access, and the URL address.

The in-text citation would be (WHO 1999).

WHO Country Health Information Profile: Samoa. U.N. W.H.O., Manila, Philippines. (updated July 1, 1999; accessed February 23, 2007). http://www.who.org.ph/chip/ctry.cfm?ctrycode=sma&body=sma.htm&flag=sma.gif&ctry=SAMOA.

Note: Some examples in this section have been taken from the Project Manual of MANP001of the Masters Programme in Anthropology (MAAN)

1.3.4 SUMMARY

Anthropologists conduct their research first-hand by means of direct fieldwork. How anthropologists actually do their fieldwork is discussed in this manual. A number of preparations must be made before any fieldwork is begun. Although every fieldwork project in anthropology has its own unique character, all projects go through the same basic stages:

1. selecting a research problem,
2. formulating a research design,
3. collecting the data,
4. analysing the data, and
5. interpreting the data.

Because no two fieldwork experiences are identical, it is important that anthropologists match the appropriate data-gathering techniques to their own fieldwork situations. During fieldwork the following methods, tools and techniques are used:

- ethnographic method,
- participant observation,
- interviewing,
- genealogies, and
- case studies.

1.3.5 REFERENCES

Anil Kumar, K. 2012. *Fieldwork manual, fieldwork and dissertation* (MANP-001). Indira Gandhi National Open University, New Delhi.

Bhasin, M.K., & Chahal, S.M.S. 1996. *A laboratory manual for human blood analysis.* Delhi: Kamla-Raj Enterprises.

Cummins, H., & Midlo, C. 1962. *Finger prints, palms and soles: An introduction to dermatoglyphics.* New York: Dover Publications Incorp.

Dooley, D. 1995. *Social science research methods* (3rd ed.). Englewood Cliff, New Jersey: Prentice-Hall.

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Guidance manual on ABO and Rh blood grouping. 2013. National Institute of Biologicals, Ministry of Health and Family Welfare, Government of India. Available at http://nib.gov.in/guidance_document/Guidance_manucal_QC_ABO_Rh_blood_grouping_26_03_2013.pdf. Accessed on 19 July 2020.

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Kapoor, S., Verma, D., Bhasin, P., & Dhall, M. 2012. 'Skinfolds as prognosticators of nutritional status among adult undernourished males of India'. *International Journal of Sociology and Anthropology. 4*(9), 257-265.

Khalil, S., Mohktar, M., & Ibrahim, F. 2014. 'The theory and fundamentals of bioimpedance analysis in clinical status monitoring and diagnosis of diseases'. *Sensors, 14*(6), 10895–10928. https://doi.org/10.3390/s140610895

Krishnan-Kutty, G. 1986 . *Peasantry in India*. 18 Abhinav Publications, New Delhi.

Lamba, D.S., Kaur, R., & Basu, S. 2013. 'Clinically significant minor blood group antigens amongst North Indian donor population'. *Advances in Hematology*. https://doi.org/10.1155/2013/215454

Lee, Y., Kwon, O., Shin, C.S., & Lee, S.M. 2015. 'Use of bioelectric impedance analysis for the assessment of nutritional status in critically ill patients'. *Clin Nutr Res. 4(1)*, 32-40.

Mead, M. 1964 . *Anthropology: A human science*. New York: D. Van Nostrand Co., Inc.

Miller, B.D. 2012 . *Cultural anthropology* (7th ed.). Pearson.

Mitra, R., Mishra, N., & Rath, G.P. 2014. 'Blood group systems'. *Indian J Anaesth*, 58:524-528.

Mukherji, D., Mukherjee, D.P., & Bharathi, P. 2009. *Laboratory manual for biological anthropology.* New Delhi: Asian Books Pvt Ltd.

Nath, S. 1996. *Forensic anthropology*. Delhi: Ashtam Prakashan.

Nelson, K . *Doing Fieldwork: Methods in Cultural Anthropology.* Inver Hills Community College.

Popkin, B., Monteiro, C., & Swinburn, B. 2013. 'Overview: Bellagio conference on program and policy options for preventing obesity in the low- and middle -income countries'. 14(1), 1-8. Department of Nutrition, North Carolina, USA. Retrieved from

https://pubmed.ncbi.nlm.nih.gov/24102826/

Redfield, R. 1941. *The folk culture of Yucatan*. University of Chicago Press.

Rosnow, R.L., & Rosenthal, R. 1996. *Beginning behavioral research. A conceptual primer.* Englewood Cliffs, New Jersey: Prentice-Hall.

Sanjek, R. 2000. 'Keeping ethnography alive in an urbanizing world'. *Human Organisation* 59(3): 280-88.

Shenoy & Jagdamba. 2017. 'Influence of central obesity assessed by conicity index on lung age in young adults'. *J Clin Diagn Res. 11*(4).

Srivastava, V.K. 2015 . *Tribes in India*. Symposium on People of India, by P.C. Joshi (Ed.). Department of Anthropology, University of Delhi.

Uzogara, S.G. 2016. 'Assessment of obesity, presumed and proven causes and prevention strategies: A review'. *Medcrave, 5*(1), 199-217.

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Welsch, R.L., & Vivanco, L.A. 2018. *Asking questions about cultural anthropology: A concise introduction.,* Higher Education Group, Oxford University press, USA.

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1.4 GUIDELINES FOR DISSERTATION SUBMISSION

Contents

This section offers guidelines on drafting dissertation reports. It contains important information relating to the structure of the final dissertation. The analysis of the data has to be presented in the form of a report. Tentatively an ideal report is divided into four to five chapters. The chapters are Introduction, research design and methodology, data analysis and interpretation, suggestions/recommendations and summary/conclusion.

1.4.1 STRUCTURE OF THE DISSERTATION

The dissertation is likely, in the majority of cases, to be structured along the following lines, although the supervisor will be able to give more detailed advice tailored to the specific nature of the research topic. It is helpful to have brief introductory and concluding paragraphs for each chapter to introduce its content and draw findings together and link to the next chapter. A report is an outcome of a research work, so while presenting it due care should be taken to systematically arrange the contents of the fieldwork. The following structure is recommended:

- Title of the Dissertation
- Table of Contents
- List of Tables and Photographs/Figures
- Acknowledgements
- Introduction
- Literature Review
- Study Area and People
- Materials and Methods
- Data Analysis and Results (to be presented in chapters or sections or paragraphs)
- Discussion and conclusion
- References

Herein we are presenting the details of what needs to be done once the report has been written.

1.4.2 FORMAT OF THE DISSERTATION AND SUBMISSION

The dissertation should be typed in English, in Times New Roman font with 12pt. font size on A-4 size paper. The length of the report may be about 80 to 120 one and half

space typed pages, not exceeding approximately 20,000 (twenty thousand) words. This does not include the title page, acknowledgements, area map and photographs including that of the learner in the field. Essential statistical and documentary appendices such as questionnaires, biological data, interview schedules may be added to the total, but these should be kept within absolute limitation. However 10% variation on either is permissible. Dissertation should be in A4 size papers and in a bound form.

Notes and references should be in the prescribed format given in this manual. Pages should be numbered sequentially at bottom centre. The final dissertation along with the cover page of the approved proposal should be spiral bound between transparent plastic sheets (cover pages).The sequence of the material in the project work should be in following order:

The Cover Page of the dissertation should state the title of the research work, the name and enrolment number of the student, the name of the Academic Supervisor, the degree programme for which it is prepared, the name of the University and the month and year of submission. (The Cover Page format is given in the Annexure).

The Title Page should give the same information as on the cover, together with the statement: 'This dissertation is submitted in partial fulfillment of the requirements for the Bachelor of Science (Honours) degree in Anthropology of the Indira Gandhi National Open University', followed by the date (month and year) of submission.

A Certificate issued by the Academic Supervisor that the dissertation submitted by the candidate is his/her own work and that the same be placed before the examiner. See the format given in Annexure.

The Table of Contents should list the contents of the dissertation by chapters, with sections where appropriate, and the page number for each, together with the page number for the bibliographic references and figures, tables and maps, if any.

Acknowledgements: Acknowledge any help you might have received in the preparation of the project work. Due acknowledgements should be given to those who helped at various levels for completion of the dissertation. If you have made any promises to informants during fieldwork like sending photographs etc., they need to be kept. These will help the people to welcome future researchers in to their area. Dissertations should not be dedicated as they are meant for evaluation.

The Main Text comprises the chapters (usually four or five, including the Introduction and Conclusion) bibliographic references and appendices, if any. Each main heading (chapters, bibliographic references and appendices) should start on a new page; sections within main headings may continue on the same page. The numbering of the main text of the dissertation should be sequential. The bibliographic references should list all works cited in the chapters and other valuable sources used in the preparation of the dissertation. Do not give separate entries for primary and secondary sources. Further guidance on citing and referencing is given in Section 1.5 of this Handbook. The Cover page of the proposal approved by the Faculty Committee must be appended to the dissertation at the end.

Submission of Dissertation

Before binding the dissertation, make sure that the pages are arranged in correct sequence and format. Ensure that the Cover Page of the dissertation proposal approved by the Faculty/Committee and the dissertation are bound together. Do make two copies of the dissertation and submit one to the University. The University will not return the

evaluated dissertation. Make sure that the final text has been carefully examined for any typing errors before it is bound and submitted. A spiral bound copy of the dissertation work of Bachelor of Science (Honours) in Anthropology should be submitted to the Regional Director of your concerned Regional Centre (IGNOU). The dissertation may be submitted either by insured registered post/insured speed post or by hand on the above address. "Dissertation–BSCANH- BANE 154" should be written prominently on the top of the envelope. This will facilitate sorting out Project Reports for various programme received in Regional Centre.

The dissertation may be submitted before the term-end examination i.e. in 15th May for July session and November 15th for January session. Presentation of the fieldwork dissertation is taken into account in awarding marks.

1.4.3 CRITERIA FOR ASSESSMENT OF DISSERTATION

The purpose of the fieldwork and dissertation work is to enable you to demonstrate your capacity to carry out a substantial piece of independent research work on a selected topic of your choice. The dissertation will be evaluated by the expert. Your dissertation will be evaluated according to the following points with marks indicated against each point:

Maximum Marks	**100**
Ability to articulate and explain the Objectives, Hypotheses, and Research Methodology	-20
Review of Literature	-10
Quality of Data Analysis, Description and Presentation	-20
Overall quality of structure, organization and Presentation	-10
References	-05
List of contents	-05
Viva-Voce	**-30**
Identification of the problem - clarity about objectives, scope and coverage of the study	10
Ability to discuss the research design, methodology, instruments used, literature connected with the work undertaken, data analysis and interpretation, findings and depth of the subject and conceptualisation of the key areas after completing the project work	10
Linking the report recommendations/Conclusions with objectives and how far these have been achieved	10

There will be Viva after evaluation of the dissertation. The viva-voce for the dissertation shall be conducted after the end of the Term End Examination TEE. Viva voce is conducted to test your proficiency in the research work. Viva voce will be conducted in your concerned IGNOU Regional center. A learner may be asked to appear for a Viva –Voce. In this case the learner will be duly intimated

about it. You are requested to appear for the same at the concerned IGNOU Regional Center with the following-

1) IGNOU's ID card.

2) Personal copy of the dissertation (hard and soft).

3) Call letter sent from the Regional Center.

It should be strictly noted that without these you will not be permitted for the viva voce. Further you need to present your work for 15 minutes at regular viva voce. For the same you need to bring your copy of dissertation along with you. Viva will be conducted by a panel of experts.

How well a research work satisfies the criteria determines the marks it receives. In general, a research work is expected to meet the requirements of all the criteria equally. For successful completion of the fieldwork dissertation, a learner should secure a minimum of 40% marks

Resubmission of Project Report/Dissertation

In case a learner fails to qualify in dissertation work, he/she has to re-submit the dissertation, after incorporating suggestions made in earlier submitted report. Dissertation is a compulsory course of BSCANH programme and as such no learner is exempted from completing this part for the award of the degree of BSCANH.

General instructions for dissertation Work

- Dissertation Work should be original and in your own style. The medium of language to be followed is English.
- It should not be a copy or reproduction of any other published or unpublished projects or project work. Such work is subjected to rejection.
- The research methodology adopted by you should be stated at the beginning of your work as already mentioned.
- Reference cited should be provided at the end as a rule.
- The length of the report may be about 20,000 words typed in one and a half space.
- The dissertation should have area map i.e. area of work or study
- The dissertation should include photographs including you in the field
- Dissertation should be in A-4 size papers and in a spiral bound form.
- The dissertation report should contain
    - Approved proforma for research proposal from mentor
    - Research proposal
    - Certificate of originality
- Dissertation reports received otherwise are not acceptable.
- The dissertation work should be taken at an individual level and not in a group.

Other Important Matter

Ensure that the dissertation contains the following:

Approved proforma for research proposal (Appendix – 1) duly signed by the supervisor and **approved by the Faculty/ Programme Coordinator of BSCANH**

Research proposal (incorporate the suggestions that were given during the approval)

Certificate of originality (Appendix)

Note: If plagiarism of any kind is found at any stage synopsis submission, dissertation submission or viva-voce disciplinary action would be levied.

Do note again: Kindly mention on the top of the envelope **"BSCANH Dissertation report (BANE 154)"**. This will facilitate sorting out dissertation work.

The envelope containing the remuneration form for the supervisor duly signed by the mentor, should be sent to "Regional Director, Concerned Regional Centre".

In all correspondence, please quote your Enrolment No.

In case you secure less than 40% marks, you will have to do the dissertation afresh.

Students are advised to contact the Regional Study Centres of the University for the formalities and procedures in this regard.

You must retain the dissertation guide till the completion of the entire BSCANH Programme.

Proforma for Approval of Dissertation Proposal (BANE 154)

Enrollment Number: ——————————————————————

Name of the Student:——————————————————————

Regional Centre:——————————————————————

Study Centre: ——————————————————————

ContactNo.——————————————————————

EMail:——————————————————————

Programme Code: BSCANH Course Code: BANE 154

Title of the Dissertation:——————————————————————

——————————————————————

——————————————————————

——————————————————————

(Note: Enclose the Research Proposal Synopsis)

Name and Address of the Mentor/Supervisor——————————————————————

——————————————————————

——————————————————————

——————————————————————

Phone No.: ——————————

EMail: ——————————

Is the Supervisor an Academic Counsellor of MAAN/BSCANH Programme of IGNOU? Yes/No

If Yes, Name and Code of the Study Centres/he is attached with:——————————

——————————————————————

——————————————————————

——————————————————————

No. of Students Currently Working under the Supervisor for MAAN/BSCANH

——————————

Note: A Mentor can guide a maximum of 5 candidates Per Session.

Academic Qualifications of the Mentor——————————————————————

Number of Years of Relevant Experience:———

Note: Enclose the Bio-data of the Mentoras given in the Appendix-III.

Signature of the Student: Signature of Mentor:

Date: Date:

Appendix II

Consent Letter of Supervisor

This is to certify that the dissertation Report titled"———————————

_____

_____

_____

_____

————"for the partial fulfillment of BSCANH Programme of IGNOU will be carried out by

Mr./Mrs./Ms.———————————————————————

Enrollment No.————————————————under my guidance.

I have read the synopsis prepared by the learner and have made the appropriate changes.

(Signature)

Name of the Supervisor:

Date:

Proforma for Mentor's Bio-data

Name of the Mentor———————————————————————

Educational Qualifications:———————————————————————

_____

Present Position:———————————————————————

_____

Present Grade of Pay:———————————————————————

Total Experience:———————————————————————

Name and Address of Present Employer:———————————————————————

_____

_____

_____

_____

Are you an Academic Counselor of IGNOU? Yes————No————

If yes, specify the Code, Name and Address of the Study Center:

Code of Study Center:———————————————————————

Name of Study Center:———————————————————————

Address of Study Center:———————————————————————

_____

_____

List of Courses beingtaught:———————————————————————

_____

_____

_____

No. of MAAN Student sunder Supervision Presently:———————————————————————

Note: A Mentor can guide a maximum of 5 candidates Per Session.

Date: SignaturewithSeal:

Appendix IV

Cover Page of the dissertation work will contain the following

Title of the dissertation Work

Under the Supervision of (Supervisor's Name) Dissertation submitted to

Indira Gandhi National Open University

In Partial fulfillment of the requirement for the award of the degree of Bachelor of Science (Honours) in Anthropology (BSCANH)

Code:

Student's Name: Enrollment No.:

Regional Center (Nameand Code): Study Center (Nameand Code):

First Page of the dissertation work will contain the following:

Programme Code: BSCANH Enrollment No.————————————————

Course Code: BANE 154

Regional Center (Name and Code): Study Center (Name and Code):

Title of the Dissertation Work"————————————————————————

——

——"

Dissertation work submitted to Indira Gandhi National Open University in partial ful fillment of the requirement for the award BSCANH Degree. I here by declare that this is my original work and has not been submitted or copied from else where.

Signature of the candidate: Date:

Name of the candidate: Address:

Certificate of Originality

This is to certify that the dissertation titled"———————————————

———————————————————————————————————

———————————————————————————————————

———————————————————————————————————"

submitted to Indira Gandhi National Open University in partial fulfillment of there quirement for the award of Bachelor of Science (Honours) in Anthropology (BSCANH) is an original work carried out by Mr./Mrs./Ms.———————————————————————————

Enrollment Number:———————————————

The contents of this dissertation are a genuine work done by the student and has not been submitted whether to this University or to any other University/Institute for the fulfillment of the requirement of any course of study.

Signature of the Student:	Signature of the Mentor:
Name:	Name:
Enrollment Number:	Designation:
Place:	Name of Institution/Organization:
Date:	Date:

Appendix V

FOR SUPERVISOR

Remuneration Bill for Guidance of Dissertation

To

The Registrar (SED) IGNOU, Maidan Garhi NewDelhi–110068

1. Programme Code: MAAN
2. Course Code: MANP001
3. Name of the Mentor———————————————————————
4. Residential Address———————————————————————

   ———————————————————————

5. Designation:———————————————————————
6. Official Address:———————————————————————

   ———————————————————————

7. Telephone No.Office:———————————————————————

   Mobile:———————————————————————

   Residence:———————————————————————

   Sl. No. Project Title:

   Enrolment No.

   Name of the Amount: Student

   1

   2

   3

   4

   5

Certified that I have guided the above listed student(s) for the irresearch work.

Dated:———————————Signature of the Supervisor:———————————

Note: The remuneration payable for guidance of Dissertation Work is Rs.300/- perstudent.

Note: A Mentor can guide a maximum of 5 candidates Per Session.

Certified that the above supervisor was approved and recommended by the concerned school of study and the aboveclaimmay be admitted.

Dy./Asst Registrar Section Officer Dealing Assistant

Appendix VI

FOR EVALUATOR

Research Proposal/Synopsis Feedback Form

Name of the Candidate.....Enrolment No.....

1. Topicof the Study:.....

   Suggestions to Improve the Topic.....

2. Introduction/Background

   Suggestions for Improvement.....

   .....

   .....

3. Statement of there search problem/hypothesis/research question/research design
   Suggestions for Improvement.....

   .....

   .....

4. Review of Literature

   Suggestions for Improvement.....

   .....

   .....

5. Objectives of the Study

   Suggestions for Improvement.....

   .....

   .....

6. Methodology

   Suggestions for Improvement.....

   .....

   .....

7. Significance of the Study

   Suggestions for Improvement.....

   .....

   .....

8. Tentative Chapterisation

   Suggestions for Improvement.....

   .....

   .....

9. Bibliography/References

   Suggestions for Improvement.....

   .....

   .....

(Signature)

Name of the Evaluator: Date: