

PART I



HUMAN ECOLOGY AND FAMILY SCIENCES

TEXTBOOK FOR CLASS XII

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FOREWORD

The *National Curriculum Framework* (NCF) 2005 recommends that children's life at school must be linked to their life outside the school. This principle marks a departure from the legacy of bookish learning which continues to shape our system and creates a gap between the school, home and community. The syllabi and textbooks developed on the basis of NCF signify an attempt to implement this basic idea. They also attempt to discourage rote learning and the maintenance of sharp boundaries between different subject areas. We hope these measures will take us significantly further in the direction of a child-centred system of education outlined in the National Policy on Education (1986).

This initiative can succeed only if all stakeholders—school principals, parents and teachers—encourage children to reflect on their own learning and to pursue imaginative activities and questions. We must recognise that, given space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. We also must remember that a prescribed textbook is only one of the learning resources for a child, and the teacher another. Her/his home and her/his environment, her/his life and her/his peers, all these are resources and sites of learning. Inculcating creativity and initiative is possible if we perceive and treat children as the chief agents of their learning, not as receivers of a fixed body of knowledge. These beliefs imply a considerable change in school routines and mode of functioning.

The book in your hands at present is an example of how a textbook can be. It is based on NCERT's resolve to reconstruct knowledge in all areas from the perspective of the learner and the dynamic socio-economic realities of contemporary India. The National Focus Group on Gender Issues in Education, appointed under the auspices of NCF-2005, emphasises the urgency of incorporating women's perspective for epistemologically redefining conventionally defined subjects like home science. We hope that the present textbook will make this subject free of gender bias and capable of challenging young minds and teachers for creative study and practical work.

NCERT appreciates the hard work done by the Textbook Development Committee responsible for this book. We are especially grateful to the members of the National Monitoring Committee, appointed by the Department of Secondary and Higher Education, Ministry of Human Resource Development, for their valuable time and contribution and the sub-committee (National Review Committee) for Human Ecology and Family Sciences (HEFS) for their contribution in reviewing the textbook.

As an organisation committed to systemic reform and continuous improvement in the quality of its products towards quality learning for all, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement.

New Delhi
February 2016

H.K. SENAPATY
Director
National Council of Educational
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PREFACE

The textbooks on Human Ecology and Family Sciences (HEFS), hitherto known as 'Home Science', have been developed based on the vision and principles of the *National Curriculum Framework – 2005* of the NCERT. Globally, the field of Home Science is known by newer nomenclatures but encompasses basically five domains, namely, Food and Nutrition, Human Development and Family Studies, Fabric and Apparel, Resource Management, and Communication and Extension. Each of these domains or specialisations (as referred to in various colleges and Universities) have grown and matured with expanding horizons, keeping in tune with the changing needs of individuals, families, industry and society. Consequently these domains have developed newer thrusts in view of the evolving job market, and in many Universities have been renamed to represent their current status and scope in a better way.

All these domains have their specific content and focus that contribute to the Quality of Life (QoL) of individuals, families and communities in the global, socio-cultural and socio-economic contexts. Every person is entitled to a good QoL, and this creates a demand for professionals who can positively contribute to different arenas and needs of personal and social life – ranging from basic sanitation, housing, health care for physical and mental well-being, safety, environmental promotion and protection, clothing, finance and a host of myriad allied aspects of living, from micro to macro levels. This obviously creates a challenge for educationists and educational institutions to train persons to deliver the multifarious services. In this context, HEFS provides numerous avenues with interdisciplinary perspectives. These include opportunities to work in industry/corporate sector, teaching at various levels, research and development, various cadres in public sector, regional, national and international organisations that work with and for communities as well as entrepreneurial ventures.

The academic fraternity, professionals working for community development and those from industry are constantly interacting and shaping the education and training in these fields. Thus educational programmes offered under HEFS (Home Science/ Family and Community Sciences) are geared up towards development of professionals who not only have knowledge and skills, but are also sensitised to the challenges, needs and concerns related to quality of life, productivity and sustainable development.

This textbook takes a holistic approach to address the pertinent issues related to work, employment and careers, keeping quality of life in perspective, individually and collectively. Hence the first unit and chapter is focussed on life skills for livelihood, attitudes to work, work challenges, creativity, performance and productivity, social responsibility and volunteerism. The importance of flexibility, diversity, adaptation, balance between work, rest and recreation, enhanced job satisfaction, and importance of occupational health and safety are dwelt upon. Entrepreneurship versus employment is discussed, especially

bringing to the fore the opportunities that entrepreneurship provides for those are interested in initiating innovation and change. While change is desirable, it is important not to forget our rich traditional heritage of knowledge and skills. Many of the traditional occupations, when coupled with innovation, modern perspectives and good marketing, have tremendous economic potential.

The other chapters and units describe the five salient domains of HEFS. Within each domain, there are several fields that offer ample professional opportunities and occupational avenues. The syllabus and textbook attempt to bring to focus the scope and significance of each domain in the present day scenario, with inputs on knowledge and skills to be acquired and honed, including use of ICT for not only gathering information but also as part of practicals, activities and projects in order to be a 'valued' professional.

The practicals have been designed to enable learners to gain insights and also have a bird's eye view of the tasks and challenges inherent in the various professional careers and avenues. Considerable emphasis is laid on 'construction of knowledge' through field exposure and first-hand experiences. The exercises and projects would help to encourage critical thinking, develop analytical and writing skills and eventually inculcate the 'passion to learn'. Many insights and 'seeds' of information have been 'sown'. Students and teachers in partnership can explore, think about, discover and discuss a variety of topics and issues. Further learning is encouraged through select exercises and review questions at the end of each unit. Some of the issues of current concern that have been addressed, could not only be thought provoking, but also foster sensitivity and social responsibility in the use of this textbook. Exercises in understanding region-specific opportunities and available resources have been included to encourage students (with guidance from their teachers) to understand, appraise and appreciate their own socio-cultural ethos and locales.

Objectives

The Human Ecology and Family Sciences (HEFS) textbook for Class XII has been framed to enable the learners to:

1. understand the scope and significance of each domain within HEFS.
2. appreciate the importance of life skills for work, livelihood and careers.
3. become sensitive to the nuances of work vis-à-vis age and gender.
4. appreciate the potential of entrepreneurship and other varied professional opportunities.
5. make informed career choices.

A feedback questionnaire is given at the end. We will appreciate your comments and views about various aspects of this textbook. You may use the given questionnaire or write to us on a plain paper/send e-mail. Your feedback will help us to improve further reprint editions.

A NOTE TO THE TEACHERS

Dear Teachers,

You must have noted the radical changes in the organisation of these textbooks, compared to the conventional way in which Home Science education was earlier designed and delivered. However, the contents and the focus of the domains within Home Science (now called HEFS in the context of the revised NCERT syllabus), essentially remain undiluted. In fact, in the syllabus and textbook organisation, care has been taken to cover the basics and go further, to expose students to the newer and emerging horizons of the five domains – Food and Nutrition, Human Development and Family Studies, Fabric and Apparel, Resource Management, and Communication and Extension. This deliberate departure from the earlier convention is to dispel the misconception about the discipline being limited in focus and scope to domestic science, and art and craft. The effort is also to create an interest in the field for its varied, multidisciplinary strengths, both in terms of quality education and potential for professional avenues.

In each chapter from Unit 2 onwards, the textbook has been designed to inform the learners about the significance and scope of each domain, the multiple thrusts that exist and are emerging. Each unit spells out the basic concepts, requisite knowledge and skills in each thrust area and delineates the career avenues and the preparation required for them in order to make informed career choices.

Unit 1 is about work, life skills, careers and livelihoods. It starts with a description about meaningful work and moves on to point out the need to balance work with rest and recreation, to ensure a good standard of living and quality of life. Further, the chapter elaborates on success and happiness in work life resulting from wholesome attitudes and approaches to work. An attempt has been made therein to introduce and sensitise youth to ethics, social responsibility, volunteerism and dignity of labour. In this context, it is pertinent to discuss the rich heritage of traditional occupations of India, with a view to informing the students that with creativity and innovation, there are immense opportunities for a satisfying career. The immense potential of entrepreneurship as a challenging career avenue is brought to focus to further the interests of the youth, especially for those who would like to be their own masters, to create employment for others while being gainfully self-employed. The unit also delves into the importance of a healthy work environment and the need to sustain good occupational health, while being aware of occupational hazards and safety measures required. It is felt that youth of today need to understand current issues including work in the context of age (child labour and engaging senior citizens) and gender (women and work). In this context, it is felt that the school(s) could invite 'guest faculty or experts' to interact with the students to enable them to obtain first hand realistic information.

Teachers should note that considerable theoretical inputs are required for students and learners to gain deeper understanding and appreciation of the different areas in each domain. Therefore, some basic theoretical information has been included in each unit. This theory-based content should provide adequate material for testing students' achievement in acquisition of knowledge. Further, based on student interest and capability, and region-specific resources and facilities, teachers may motivate and help students to obtain more information in areas and issues of their interest. The inclusion of review questions, activities, exercises, practicals, field visits and reporting, are envisaged as opportunities for students to develop reading and writing skills as well as critical and analytical thinking. Gathering and processing information is important *per se*. However, students should be encouraged to think and discuss the various issues and topics delineated in this textbook as a means of helping youth to think, construct knowledge and articulate. All these experiences have been deliberately introduced so that learning may be meaningful and enjoyable.

It may be noted that in the units, the authors have included several activities and exercises, which are suitable and would enhance learning as well as relieve the tedium of classroom instruction. It is expected that teachers and students would decide upon the number of activities and exercises they can honestly complete within the academic year. Teachers may encourage students to do as many as possible in and outside the classroom to 'fan the flame' of curiosity and joyful learning. Use of ICT has been recommended in these textbooks for seeking information, for making power point presentations, designing educational and promotional materials. In all units, wherever possible, teachers are advised to ensure that the students have exposure and practice with ICT for various purposes.

In addition, a number of inter-disciplinary projects have been included. Every student should have an opportunity to participate in any one project, and it is expected that students would have an opportunity to participate in the chosen project either in groups or in pairs. Since the learners may be relatively unfamiliar with conducting projects, it is essential that the project be guided by the teacher throughout, from the planning stage to execution and report writing.

The syllabii for all chapters delineated in further detail are given herein. In the process of developing the textbook, the teams have expressed the need for highlighting and including and deleting some selected issues. Thus, some modifications have emerged that are indicated in a tabular form.

Class XII Syllabus printed in Class XI textbook	Modifications in the Class XII textbook
Unit I: Work, livelihood and career; Preparation, choices and selection • Work, age and gender • Occupational heritage of India • Career options • Entrepreneurship and self employment • Life skills for career building	Unit I: Work, livelihood and career • Quality of Life • Social Responsibility and Volunteerism • Traditional Occupations of India • Work, Age and Gender • Attitudes and Approaches to Work • Life Skills and Quality of Work Life • Work and Work Environment • Entrepreneurship
Unit II: Career Opportunities Scope of Human Ecology and Family Sciences in higher education and careers Major concepts, relevance and skills in the following areas	Career Opportunities Scope of Human Ecology and Family Sciences in higher education and careers Major concepts, relevance and skills in the following units
A. Nutrition, Food Science and Technology Specific Careers and Areas • Clinical nutrition and dietetics • Public nutrition and health • Catering and food services management • Food processing and technology • Food quality and food safety	Unit II: Nutrition, Food Science and Technology Specific Careers and Areas • Clinical Nutrition and Dietetics • Public Nutrition and Health • Catering and Food Services Management • Food Processing and Technology • Food Quality and Food Safety

Class XII Syllabus printed in Class XI textbook	Modifications in the Class XII textbook
B. Human Development and Family Studies Specific Careers and Areas ● Early childhood care and education ● Guidance and counselling ● Special education and support services ● Support services for children in difficult circumstances ● Management of institutions and programs for children, youth and elderly	Unit III: Human Development and Family Studies Specific Careers and Areas ● Early Childhood Care and Education ● Guidance and Counselling ● Special Education and Support Services ● Management of Support Services, Institutions and Programmes for Children, Youth and Elderly
C. Fabric and Apparel Specific Careers and Areas ● Care and maintenance of fabrics in institutions ● Design for fabric and apparel ● Retailing and merchandising ● Production and quality control in garment industry ● Museumology and textile conservation	Unit IV: Fabric and Apparel Specific Careers and Areas ● Design for Fabric and Apparel ● Fashion Merchandising ● Production and Quality Control in Garment Industry ● Textile Conservation in Museums ● Care and Maintenance of Fabrics in Institutions

Class XII Syllabus printed in Class XI textbook	Modifications in the Class XII textbook
D. Resource Management Specific Careers and Areas ● Human Resource Management ● Hospitality management ● Designing of interior and exterior space ● Event management ● Consumer services	Unit V: Resource Management Specific Careers and Areas ● Human Resource Management ● Hospitality Management ● Ergonomics and Designing of Interior and Exterior Spaces ● Event Management ● Consumer Education and Protection
E. Communication and Extension Specific Careers and Areas ● Management of development Programmes. ● Development communication and journalism ● Media management and advocacy ● Media design and production ● Corporate communication and public relations	Unit VI: Communication and Extension Specific Careers and Areas ● Development Communication and Journalism ● Advocacy ● Media Management, Design and Production ● Corporate Communication and Public Relation ● Management of Development Programmes

PRACTICALS AND PROJECTS

Class XII Syllabus printed in Class XI textbook	Modifications in the Class XII textbook
Nutrition, Food Science and Technology 1. Qualitative tests on food adulteration 2. Development and preparation of supplementary foods for nutrition programmes 3. Planning messages for nutrition, health and life skills using different modes of communication for different focal groups 4. Preservation of foods using traditional and / or contemporary methods 5. Packaging and study of shelf life of the prepared products	Nutrition, Food Science and Technology ● Qualitative tests on food adulteration ● Development and preparation of supplementary foods for nutrition programmes ● Planning a menu for a school canteen or midday meal scheme ● Modification of a normal diet to soft diet for elderly person ● Design, Preparation and Evaluation of a processed food product
Human Development and Family Studies 6. Preparation and use of teaching aids, using indigenous and locally available material to communicate socially relevant messages for children, adolescents and adults in the community 7. Conducting mock sessions among peers in career guidance, nutrition counseling and personal counseling under supervision	Human Development and Family Studies ● Preparation and use of teaching aids, using indigenous and locally available material to communicate socially relevant messages for children, adolescents and adults in the community ● Conducting mock sessions among peers in career guidance, nutrition counselling and personal counselling under supervision

Fabric and Apparel 8. Preparation of articles using applied textile design techniques: tie and dye/ batik/block printing 9. Application of quality control techniques in garment industry: a. Fabric inspection b. Quality of seams and notions c. Size labels d. Packaging 10. Care and maintenance of fabric products: a. Mending b. Cleaning c. Storage	Fabric and Apparel ● Preparation of articles using applied textile design techniques: tie and dye/batik/block printing ● Developing a female fashion figure ● Application of quality control techniques in garment industry: a. Fabric inspection b. Quality of seams and notions c. Size labels ● Care and maintenance of fabric products: a. Mending b. Cleaning
Resource Management 11. Open an account in bank/post office. Learn basic banking operations (Mock exercises in the lab with real bank forms) 12. Application of traditional/contemporary techniques of home decorations: a. Floor and wall decorations b. Flower arrangement c. Other forms of local decorations	Resource Management ● Observe and critically analyse any event on the basis of the specified criteria. ● Make a leaflet or a pamphlet for consumer education (any one of the following): a. CPA (Consumer Protection Act) b. Consumer responsibilities c. Consumer organisations d. Consumer problems ● Evaluate an advertisement

Extension and Communication	Communication and Extension
13. Analysis and discussion of print, radio, and electronic media with reference to: focus, presentation, technology and cost 14. Communicating with groups on any one of the following themes: - Social messages- gender equality, AIDs, female foeticide, child labour, rights abuse and other such themes - Scientific fact / discovery - Any significant incident/ event	● Analysis and disccussion of – print – radio – electronic media with reference to: focus, presentation, technology and cost

Class XII Syllabus printed in Class XI textbook	Modifications in the Class XII textbook
Projects Any one of the following may be undertaken and evaluated: 1. a. Analysis of traditional occupations prevalent in one's local area, their beginnings, present status and challenges faced b. Analysis of gender roles, entrepreneurial opportunities, and future careers and family participation 2. Documentation of any public/mass campaign being implemented in own area, with reference to: a. Purpose of campaign b. Focal group c. Modalities of implementation d. Stakeholders involved e. Media and methods used Comment on the relevance of the campaign. 3. Study of an integrated community based programme being implemented in own area, with reference to: a. Programme objectives b. Focal group c. Modalities of implementation d. Stakeholders involved	Projects Note: Any one of the following projects may be undertaken and evaluated: 1. a. Analysis of traditional occupations prevalent in one's local area, their beginnings, present status and challenges faced b. Analyse gender roles, entrepreneurial opportunities and future careers and family participation 2. Documentation of any public/mass campaign being implemented in own area, with reference to: a. Purpose of campaign b. Focal group c. Modalities of implementation d. Stakeholders involved e. Media and methods used Comment on the relevance of the campaign. 3. Study of an integrated community-based, nutrition/health programme being implemented in own area, with reference to: a. Programme objectives b. Focal group c. Modalities of implementation d. Stakeholders involved

4. Visit to the neighbouring areas and interviews with two adolescents and two adults regarding their perception of persons with special needs 5. Take a profile of any one person with special needs, child or adult: to find out their diet, clothing, activities, physical and psychological needs 6. Observe and document any event in your school/ home or neighbourhood. Evaluate the same with respect to: - Relevance - Resource availability and mobilisation - Planning and execution of the event - Financial implications - Feedback from stakeholders Suggest modifications for the future.	4. Visit to the neighbouring areas and interviews with two adolescents and two adults regarding their perception of persons with special needs 5. Profile any one person with special needs, child or adult, to find out their diet, clothing, activities, physical and psychological needs 6. Plan and execute any event in your school. Evaluate the same with respect to: - Its relevance - Resource availability and mobilisation - Planning and execution of the event - Financial Implications - Feedback from stakeholders - Suggest modifications for the future. 7. Planning messages for nutrition, health and life skills using different modes of communication for different focal groups. 8. Market survey of processed foods, their packaging and label information.
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Constitution of India

Part IV A (Article 51 A)

Fundamental Duties

It shall be the duty of every citizen of India —

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers, wildlife and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement;
- * (k) who is a parent or guardian, to provide opportunities for education to his child or, as the case may be, ward between the age of six and fourteen years.

Note: The Article 51A containing Fundamental Duties was inserted by the Constitution (42nd Amendment) Act, 1976 (with effect from 3 January 1977).

* (k) was inserted by the Constitution (86th Amendment) Act, 2002 (with effect from 1 April 2010).

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UNIT I

WORK, LIVELIHOOD AND CAREER



WORK, LIVELIHOOD AND CAREER

LEARNING OBJECTIVES

After completing this chapter, the learner will be able to:

- explain meaningful work, livelihood, careers and entrepreneurship.
 - understand the concepts of standard of living and quality of life.
 - know the importance of social responsibility and volunteerism.
 - explain the attitudes and approaches that contribute to quality of work life and successful careers.
 - be sensitive to the issues of work in relation to traditional occupations and special groups namely women, children and elderly.
 - describe the characteristics of a healthy work environment
-

INTRODUCTION

Deciding a career for oneself is not an easy task. On one hand, there are several career avenues to choose from, and on the other, for a young person, aptitude and talent are yet to be identified and recognised. Also in some cases, interests are very diverse. Thus, it is not easy to make a choice. In order to make the right choice, it is essential that youth be exposed to different possible options. First, it is important to explore oneself in order

to identify one's own aptitudes, talent, personal preferences, needs and aspirations. Then the exploration of options must start, in which one tries to combine one's strength for personal benefit as well as social contribution. An appropriate choice will bring the person success and satisfaction.

Work and Meaningful Work

Work is primarily an activity that all human beings have to perform and through which each one 'fits' into the world, creates new relations, uses an individual's unique talents and skills and above all, learns and grows to develop one's identity and a sense of belongingness to society. Work can be described as essential activities undertaken for a purpose or out of necessity.

Work is central in all cultures, although every culture has its own values and perceptions about it. In fact, work essentially constitutes the bulk of daily life activities for all human beings. The type of work undertaken by people depends on several factors such as education, health, age, access to opportunities, globalisation, geographic location, financial returns, family background and so on.

Most human beings work to acquire money, provide for their families, and to earn leisure, recreation, play and free time. Work can serve as a catalyst for developing one's personal identity and boosting self-esteem. Work contributes in many forms. When we work, we contribute to ourselves—our sense of confidence or well-being and for financial gain. We also contribute to the organisation that employs us by helping to create better products or a better reputation for the organisation, or greater profits. Our work has an impact on the quality of life in the world around us.

It can be rightly said that 'work is the oil that lubricates the machine of society'. Not only human beings, but all creatures and elements of nature are constantly 'working', contributing to life itself. In fact, it is the collective work of humans and nature that gives us our basic necessities, comforts and luxuries. While in most cases, work primarily enables the worker to earn a livelihood, there are persons who work ceaselessly for pleasure, intellectual stimulation, contribution to society *per se*, despite the fact that they do not earn any amount of money, for example, the work done by family members for the family, volunteers, etc. Thus, work is not always about how much money a person earns; rather it is about whether one makes a contribution to oneself, one's family, one's employers, to society, to nation or to the world.

Work may be viewed as:

- A 'job' and a means of making a 'living'.
- A task, or duty that entails a sense of obligation.
- A means of security of livelihood through securing job and income.
- 'Dharma' or duty, an expression of one's true Self, an expression of one's unique talents that influences the quality of life of self and others around us.
- A part of spiritual practice.
- A vehicle for one's creations.
- A source of joy and fulfillment.
- Working and earning one's livelihood offers scope for hope, self-esteem and dignity.
- A symbol of status, power and control.
- A rewarding experience, a sort of mental or physical workout that can result in success.
- A means of self development and self-actualisation (reflecting values and aspirations).

When an individual is involved in meaningful work, s/he develops a sense of identity, worth, and dignity.

What is meaningful work? : Meaningful work is useful to society or to others, is done responsibly and is enjoyable to the worker. It enables the worker to use his/her skills and judgment, to showcase his/her creativity, or problem-solving ability. Ideally, work should be performed in an environment that stimulates the development of positive professional relationships and also brings recognition and/or rewards.

When the outcome or result of the work performed is meaningful or successful, it contributes to personal growth, instills confidence and self worth and may eventually even lead to actualisation of full potential. Work provides opportunities to contribute to the improvement of one's own life conditions and that of society in the wider context.

For any person, being involved in work (as an employee or self employed) that best suits one's personal attributes, talents or aptitude, competence and skills is very important. This paves the way for a life long career. So it is important to choose something to sustain the individual's enthusiasm to carry on his/her work. Therefore, the work life for anyone and everyone should ideally be an expression of one's potentials and aspirations. Persons entering work life and also those thinking of building a career can ask themselves the following questions:

- What are my special talents, traits and interests vis-a-vis an occupation?

- Is the work stimulating and challenging?
- Is the occupation likely to give me a sense of being useful?
- Does the job make me feel that I am contributing to society?
- Are the ethos and environment of the workplace likely to be suitable to me?

For most persons, it is definitely imperative and obligatory to earn a livelihood in order to fulfill the basic needs of self and family. Most work can be for earning money – such work is conventionally referred to as a ‘job’. However, many individuals choose to go beyond a job, to make a career, working steadily on a chosen career path. Thus a ‘career’ is more than just a job. One may distinguish between a job and a career by saying ‘job is an involvement in work for the sake of it’ whereas ‘a career is driven by a deep desire to excel and a passionate need to grow, develop and prove oneself within the chosen field of work’.

There have been changes in concepts about careers over the years. It is no longer sufficient to get a job. It is very important to continually upgrade and learn newer skills, update knowledge and build or enhance competencies, in order to achieve success. Thus, in the modern world, education should not stop in youth or early adulthood but needs to continue into one’s middle career years and if necessary, into one’s later career years.

How does one decide what career to pursue? Many children may choose to follow in their parents’ footsteps. Others may select careers that differ from their parents or what their parents might have planned for them. One of the most important criteria for selecting an avenue is that one must feel a sense of keen interest and desire for the chosen path. One of the crucial aspects in making decisions about the choice of career is that one must find enjoyment in the job, particularly when one assumes financial responsibility for the family.

Work, Careers and Livelihoods

Work is a set of activities with an intended set of outcomes. Yet it is not necessarily tied to paid employment, but may include entrepreneurship, consulting, volunteerism, contract, social work for community welfare and other professional activities. Livelihood denotes the means and occupation by which a person supports oneself to meet basic needs, and sustain one’s lifestyle. It involves choice of occupation and career path and the design of a work lifestyle. On the other hand, careers are unique to each person and are dynamic, unfolding throughout life. Career is a life management concept. Growing in one’s career is a lifelong process that involves managing roles, maintaining a balance between paid and unpaid work, learning, personal life roles, and making transitions whenever or

wherever necessary to move towards a personally determined future. The Webster dictionary defines career as “a field for or pursuit of consecutive progressive achievement especially in public, professional, or business life” and work as “the labor, task, or duty that is one’s accustomed means of livelihood/profession or occupation chosen as one’s life’s work”. Whatever one chooses, in a holistic sense it should nourish body as well as mind and benefit self as well as others.

Work has several perspectives. By and large, the popular connotations of work are:

- (i) *Work as a job and livelihood:* Here work is mainly a source of income enabling desired outcomes; for instance, doing a job to support one’s family. The person finds job satisfaction primarily from the income earned.
- (ii) *Work as a career:* The person views his/her work as a path to progressively ascend professionally in terms of higher posts/positions, status, pay, and responsibility. A person who works for a career will dedicate considerable amounts of time and energy to the work, because these are temporary costs of future gain. Such a person gets job satisfaction from continuing advancement and achievements.
- (iii) *Work as a calling:* Seeing work as a calling, a person derives satisfaction from the work itself. The person feels called to do the work based on inner drives and the feeling that the work derives from an inner or higher direction.

The following anecdote illustrates the concepts discussed hitherto: *Three men were breaking boulders with strong hammers. When asked what they were doing, the first man answered, “This is my job, I am breaking these rocks into smaller pieces”. The second man said, “This is my livelihood. I break rocks to make a living in order to feed my family”. The third man said “I have a vision, to become a sculptor and therefore I am carving a statue out of this big stone”.* The third man, visualised that each hammer blow would contribute to the shaping of his career, while the first and second men were clearly focused on their job and livelihood.

REVIEW QUESTIONS

- What are the different ways in which work can be perceived?
- Differentiate between job and career.
- What is meant by meaningful work?

Work, Rest and Recreation

Human beings work, as per choice, circumstances or necessity. The type and amount of work are closely related to the work conditions. They determine productivity and outcomes which are important aspects of work life. To ensure better output and productivity, all human beings perforce need to rest, relax, recoup from fatigue and refresh themselves. Therefore, to ensure good quality of life and well being, it is important to avail of opportunities (even make time) to rest, involve in recreational and leisure activities. Leisure activities or recreational activities are those activities that provide rest, pleasure, involvement, typically promoting fun, enjoyment and well-being. Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

In order to guard against burnout, professionals (and students) should take rest and relax, so that their productivity is not affected. One of the most common and effective methods is to engage in some form of recreation. Recreation is any activity that allows the body, mind and/or spirit to rest and recover from hard work, which may be physical and/or mental.

In fact, the concept of 'eight-hour day' or '40-hour work week', originated in the Industrial Revolution in Britain, where industrial production in large factories transformed working life and imposed long hours and unregulated, poor working conditions. The use of child labour was common and prolonged hours of work, ranging from 10 to 16 hours for six days a week, prevailed. Thus, emerged the slogan "Eight hours labour, eight hours recreation and eight hours rest". The eight-hour day movement forms part of the early history leading to the celebration of Labour Day or May Day in many nations and cultures.

Rest and recreation are essentially for relaxation from work; the brain can stop thinking and worrying, the nerves and muscles are given a chance to rest for some time and become energised. This can be accomplished by changing the kind of work or activity one is doing. Activities that one indulges in for relaxation should be restful, healthy and joyful.

Spending some quiet hours at home with the family is better than the excitements and distractions of a club. A brisk walk will accomplish more than spending time in worthless activities. Watching television is one of the largest leisure or recreational activities; using computers, playing computer and video games, reading, playing sports, listening to music, watching films, gardening, swimming, singing, etc. are examples of recreational activities. In short, it means one should engage in something one enjoys, such as a hobby, a favourite sport or other pastime.

Standards of Living and Quality of Life

People work in exchange for money. This is known as income. The money is used to obtain the goods and services required to survive. The more money one earns, the larger is the contribution to the economic cycle of the nation. This helps to improve the standard of living and better the quality of life.

'Standard of living' generally refers to the wealth and level of comfort, material goods and necessities available. It is the ease by which people living in a time or place are able to satisfy their wants. Economic standard of living concerns the physical circumstances in which people live, the goods and services they are able to consume and the economic resources they have access to. Basic necessities such as adequate food, clothing and housing are fundamental to wellbeing.

Standard of living commonly refers to the following factors:

- Income
- Quality and availability of employment
- Cost of goods and services
- Gross Domestic Product (GDP)
- National economic growth
- Quality and affordability of housing
- Number of paid vacation days per year
- Quality and availability of education
- Incidence of disease
- Economic and political stability
- Social inequalities or disparities
- Poverty
- Infrastructure
- Amount and hours of work required to purchase necessities
- Affordable access to quality healthcare
- Life expectancy
- Political and religious freedom
- Environmental quality
- Safety
- Climate

Standard of living is often used to compare different areas or countries or to assess the progress of a country by comparing the standard of living at different points of time.

One measure of standard of living is the Human Development Index (HDI), developed in 1990 by the United Nations. It considers life expectancy at birth, adult literacy rates and per capita Gross Domestic Product (GDP) to measure a country's level of development.

GDP is the value of all goods and services produced within the geographic boundaries of a nation/region within a specific period of time (generally, a year). It is commonly used to measure national income and output (economic output).

'Quality of Life' takes into account not only the material standard of living but also other intangible aspects of human life such as leisure, safety, cultural resources, social life, physical health, environmental quality, etc. The United Nations' Universal Declaration of Human Rights, adopted in 1948, has provided a list of factors that can be considered. It includes many things that citizens of many developed countries take for granted, but are not available in a significant number of countries around the world. Although this declaration is more than 68 years old, in many ways it still represents an ideal to be achieved.

Factors that may be used to measure quality of life include the following:

- Freedom from slavery and torture
- Equal protection of the law
- Freedom from discrimination
- Freedom of movement
- Freedom of residence within one's home country
- Presumption of innocence unless proven guilty
- Right to marry
- Right to have a family
- Right to be treated equally without regard to gender, race, language, religion, political beliefs, nationality, socioeconomic status and more.
- Right to privacy
- Freedom of thought
- Freedom of religion
- Free choice of employment
- Right to fair pay
- Equal pay for equal work

- Right to vote
- Right to rest and leisure
- Right to education
- Right to human dignity

The two indicators, i.e. standard of living and quality of life, help us get a general picture of what life is like in a particular location at a particular time.

A higher standard of living means a higher quality and quantity of goods and services available to individuals and to society, contributing to material well-being. The gross domestic product per person (GDP per capita) is often used as a measure of the standard of living. An increase in GDP is associated with greater material well-being and thus with a higher standard of living.

The right to an adequate standard of living is enshrined in Article 25 of the Universal Declaration of Human Rights. “Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control. Adequate for health and well-being means *adequate food, clothing and housing*. Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection”.

It is a fact of life that ‘all people are not equally endowed’ due to several reasons. Therefore, it becomes the responsibility of those persons who have more ‘advantages’ to help those who are ‘disadvantaged’. It is estimated that about one third of the world’s poor are in India.

What is poverty line? It is the minimum level of income deemed necessary to achieve an adequate standard of living in a given country to cover necessities such as food, clothing, housing. If the family income is below the figure specified, it is termed a ‘BPL family’ (Below Poverty Line family). The poverty line changes over time and varies by region and is defined differently by different governments and institutions.

Development is the key to reducing poverty. However, the pace of development of a nation or a group depends on the productivity and success of all its members. Hence, in this context, it is important to realise that all members of society should make conscientious and concerted efforts to help the disadvantaged to have a better life. It is often said that one should give back to society what one receives and gains from it.

REVIEW QUESTIONS

Explain briefly the following terms:

(a) Standard of Living (b) Quality of Life

Social Responsibility, Volunteerism, *Shramdaan*

Social responsibility was viewed in the past by some people as the prerogative of visionaries and missionaries who believed they could make a difference to the lives of people who did not have adequate resources. However, in the modern day, this approach has become essentially a 'welfare model' for helping the disadvantaged groups in society. A mature outlook, genuine liking for people, concern for their welfare, patience, no prejudices about class, culture, religion or race make up a social worker's personality. The ability to work in difficult conditions, accepting and tolerating problems, is required of social workers. Majority of those engaged in social work are dedicated, conscientious people.

Social responsibility entails actions and procedures, particularly on the part of governments, institutions and corporates, to help individuals in need and to promote total well-being of the society. These efforts may address several needs such as improving the economic situation of people in need, education, sanitation, agriculture, and many other aspects of their lives including physical and mental health, care of the elderly and differently abled. Social responsibility is about how people, communities and institutions in a society take action to provide certain minimum standards and certain opportunities.

Volunteering is the practice when a person works for others without any motive of getting financial or material gain. Here volunteerism can be described as contributing one's time, talents, skills, energy, for charitable, educational, social, political, or other worthwhile purposes. It is generally altruistic and is undertaken to promote quality of life. Volunteering has a meaningful, positive impact on your community. Sometimes volunteering can help to gain skills. Volunteering takes many forms and is performed by a wide range of people. Many volunteers are specifically trained in the areas they work in, such as medicine, education, disaster relief and other natural and man-made calamities.

When students volunteer in areas in which they are specifically trained and have skills such as nursing, early childhood education, care of the elderly etc., it is spoken of as skills-based volunteering. Other areas for

volunteering include environmental volunteering. Volunteers can conduct a range of activities that contribute towards environmental management including environmental monitoring, ecological restoration such as re-vegetation and weed removal, and educating others about the natural environment. eVolunteering is a modern trend. It is also known as virtual volunteering, online volunteering or cyber service and teletutoring. For this, the volunteer helps with selected tasks, in whole or in part, using the computer and Internet.

Shramdaan, Seva, Kar Seva

Every human being seeks satisfaction and fulfillment in life. In this search, many think beyond monetary considerations and involve themselves in activities that are in the interest of less endowed or marginalised people or even to preserve nature. Thus, the need for a balance between the two attributes – the spiritual and the material—is indeed the essence of human happiness and dharma. *Seva* or service to others has been undertaken by innumerable persons for this purpose. It is believed that *seva* helps to relax the mind and makes one less self-centred. Social service and selfless activity also help to enhance creativity and innovation. One refreshes not only one's mind, but also one's whole personality. The concept of equity and justice is an integral component of human life and Indian culture. Mahatama Gandhi, the Father of our nation, is globally reputed as a leader who understood and practised this.

Shramdaan has been practised by Indians, wherein '*shram*' denotes effort and '*daan*' means donation. In India, there are innumerable examples of individuals, groups and organisations that work towards 'doing good to others'. This effort serves dual purposes: it helps the person to understand his/her own nature better and assists in fostering a sense of self-worth and also leads to individual transformation and empowerment. *Kar Seva* is another type of *shram daan* where the '*Sevaks*' volunteer free services for a religious cause. It originates from the Sanskrit words '*kar*' meaning hand and '*sevak*' meaning helper. You may have heard of the '*kar seva*'/voluntary service offered at the Golden Temple in Amritsar.

At the societal level there is collective upliftment and joint efforts to solve any problem ranging from road building, improving sanitary conditions, water conservation, economic benefits as well to working for the cause of alleviating oppression of gender, class or caste. This is born out of the philosophy of equality of human beings, dignity of labour and the concept of people capable of helping themselves. In the past in India, communities joined hands to undertake welfare activities for the community as a mark of their contribution to the land that sustained them. This was also supported

by the principle that every person has a purpose and unique talent to give to others, the blend of which leads to an offering of service to others. It is also believed that service and *shramdaan* are good 'stress-busters'. Thus a triad of spiritual belief in duty to oneself and others coupled with yogic way of life and service and *seva* are vital for coping with the mental and physical demands of daily life and work pressure.

Individuals involved in helping professions, social work, social responsibility initiatives and activities are committed to the dignity, worth, and value of all human beings, regardless of social class, race, colour, creed, gender or age.

In recent times, Corporate Social Responsibility (CSR) is being increasingly integrated into business by large companies with a view to sharing their profits with society. Corporate leaders and companies take responsibility for the impact of their activities on the consumers, employees, communities, stakeholders and all other members of the public and the environment. Current approaches in CSR include community-based development projects such as early childhood education, enriching school education for children, skill training for adults, reduction and prevention of malnutrition, morbidity and mortality, health promotion in rural and tribal areas, adult education programmes, non-formal education, providing income generation activities and market channels, promoting region-specific eco-friendly practices, water conservation, environmental sanitation, providing R&D support and promotion of natural fibres, textiles, eco-friendly dyes, embroideries, other crafts. The practice of CSR has come to stay and indicates that this trend will grow and become stronger. This creates opportunities for persons with interests and aptitude in social services and community welfare, sustainable development and environment management.

ACTIVITY 1

Field visit: Organise field visits to at least three NGOs who are involved in different types of voluntary efforts. Encourage the students to write reports on the objectives and activities of the NGO, the type and coverage of participants in the services rendered, the students' reflections and comments.

ACTIVITY 2

Form groups of students, each group having not more than 6-8 members. Students should be encouraged to access internet and study one of the following.:

- a) NGO interventions at the national level.
- b) NGO interventions at the international level.
- c) Government of India /State Government/Municipal initiatives.
- d) Corporate Initiatives /Corporate Social Responsibility.

Direct each group to discuss success stories.

Discussion points

- Sharing of information regarding objectives and activities.
- Outreach activities that are currently done and those that could be done.
- Scope of future interventions by the NGOs.
- How the younger generation can be involved in voluntary efforts.

TRADITIONAL OCCUPATIONS OF INDIA

India is one of the richest countries as far as art and culture are concerned. Few countries in the world have such an ancient and diverse culture as does this country. Despite diversity, there has been cultural and social cohesiveness of an enduring nature. Over the years, the stability of this culture has been



maintained more through the social and cultural practices, though there have been some disruptions through foreign invasions and upheavals.

Agriculture has been one of the major occupations for a large proportion of the population because the climatic conditions in most parts of India are suitable for agricultural activities. Since almost 70 per cent of the population lives in rural areas, farming is the largest source of employment for millions of people. A considerable proportion of them are involved in farming small plots of land, many of which may not even be owned by them leading to only marginal production of crops. Such poor yield may not be even sufficient for family consumption, leave alone permitting sale of produce for profit. In most parts of the country, some farmers produce cash crops for sale in urban markets, and in some areas, crops such as tea, coffee, cardamom and rubber are of great economic importance because they bring in foreign exchange. India is the largest producer of cashew nut, coconut, milk, ginger, turmeric and black pepper in the world. It is the one of the largest producers of fruits and vegetables, spices and condiments and tea. Yet another important traditional occupation has been fishing because of the country's very long coastline.

Handicrafts have been one of the traditional occupations in Indian villages, and today many Indian arts and crafts are very popular in the international market and have become a means of livelihood for the rural folk. Some examples of crafts are wood craft, pottery, metal craft, jewellery making, ivory craft, comb craft, glass and paper craft, embroidery, weaving, dyeing and printing, shell craft, sculpture, terracotta, sholapitha craft, dhurries, rugs and carpets, clay and iron items, etc. Weaving is a cottage industry in India. Each state has typical woven fabrics, embroideries and traditional costumes which are suitable for the region-specific climate and life style. Different regions in India are famous for different types of weaving. Indian hand-woven fabrics have won acclaim for centuries.

In the past many of these were made for daily use and others for decorative purposes. These occupations and many others are reflective of the base of the socio-economic culture. However, the modern economy has catapulted such craft items into the global market, earning the country considerable foreign exchange.



Shola craft of Odisha



Channapatna dolls of Karnataka



Stone Sculpture

Traditionally, the processes, techniques and skills of the crafting and manufacturing were handed from one generation to the next, to members within the family. The transfer of this indigenous knowledge and training thereof, was primarily home-based training, and the know-how and finer nuances were tightly guarded secrets within closed groups in a given occupation. In India, the dynamics of religion, caste and occupation have been tightly interwoven, coupled with hierarchical order of clusters within the social fabric of the country. There are hundreds of different traditional occupations, for example, hunting and trapping birds and animals, gathering and selling foreign produce, garland making, salt making, tapping of *neera* or palm sap juice, mining, brick and tile making. Other inter-generational traditional occupations include priests, sweepers, scavengers, leather workers, etc.

Like weaving, embroidery and the visual arts, each region of India has a typical cuisine, comprising a vast variety of local foods cooked with indigenous ingredients and spices. India is well known for its tasty, tongue-tickling cuisine which has emerged as a source of livelihood for innumerable persons, ranging from street food vendors to speciality restaurants and theme pavilions in 5-star hotels. Many popular traditional foods and spice mixes and *masalas* are in demand in other countries.



Embroidery and Textiles of India

India has a multiplicity of visual arts that have been in practice for over four thousand years. Historically, the artists and artisans were supported by two main categories of patrons: the larger Hindu temples and the princely rulers of various states. The main visual arts arose in the context of religious worship. Distinctive regional styles of architecture are seen in different parts of India, reflecting various religions namely Islam, Sikhism, Jainism, Christianity and Hinduism, which typically co-existed across the country. Therefore in different places of worship and mausoleums (burial chambers), palaces, etc. a great variety of images skilfully carved in stone, or cast in bronze or silver, or modeled in terra-cotta or wood or colourfully painted were commonly prevalent, most of which have been preserved in India's vast heritage. In the modern scenario, these arts are preserved and promoted through the efforts of government and several non-governmental organisations, providing occupational avenues including entrepreneurship.



Warli Painting of Maharashtra

Puppetry Craft

Despite the rich heritage of traditional occupations, in the modern context, these works of art are gradually losing out to mass-produced goods, leaving the artisans with meager sources of income on the one

hand and a gradual erosion of the aesthetic appreciation of fine arts on the other. Illiteracy, general socio-economic backwardness, slow progress in implementing land reforms and inadequate or inefficient finance and marketing services are major constraints that cause this trend. Shrinkage of forests, depletion of resource base and general environmental degradation are responsible for various problems faced in this context.



Coconut craft of Kerala



Bamboo craft of Assam

These are tremendous challenges and indicate an urgent need for the revival and sustaining of the indigenous knowledge, know-how and skills which are fast losing ground. Some of the areas where interventions are required are design innovations, preservation and refinement strategies, use of eco-friendly raw materials, packaging, establishment of training facilities, conservation of traditional knowledge and protection of intellectual property rights (IPR). It is important for the modern youth and communities to be aware of the tremendous scope and potential for career avenues for individuals. In addition, such efforts and initiatives will go a long way to enhance the income generation potential of the rural folk. It is worthy to note that the Government of India is making concerted efforts in this direction. The need of the hour and the challenge confronting Indian society is to maintain the diversity without the hierarchy or caste-based work divisions in the democratic milieu.

ACTIVITY 3

Visits to local artisans can be arranged by the school. This may be followed by students preparing resource file on the local traditional arts, crafts, cuisines.

ACTIVITY 4

An exhibition may be organised to showcase the local traditional arts and crafts.

WORK, AGE AND GENDER

The age and sex of members of any workforce influence the dynamics of personal and professional lives, both from the perspective of the individual (micro perspective) and also that of society and nation (macro perspective). The health and development of children and women is at stake when they are forced into labour that is not suitable to their physiological and psychological state. These segments of the population as well as the elder population need attention from several perspectives. Let us briefly discuss the challenges facing these three groups.

Gender Issues in Relation to Work

Nature distinguishes the two sexes clearly in most forms of life, with biological and functional differences being well established. Human beings generally differentiate between the two sexes, i.e. men and women. However, lately India's Supreme Court has recognised transgender people as a third gender who are also referred to as transsexual, cross dressers etc. The differences between men and women range from biological to socio-cultural. The terms '**sex**' and '**gender**' indicate the differentiations from the biological to the social and cultural perspectives. The term sex and gender are often used interchangeably, but strictly speaking they have different biological meanings. Sex refers to the biological categorisation based on genetics, reproductive organs or similar things, whereas, gender is based on social identity. Male denotes boys and men whereas female denotes girls and women. The external manifestation of sex is through the primary sexual organs or the genitals. This difference is due to XX and XY or some other chromosome combinations. In every society, the social and cultural practices determine how various genders are expected to behave and the type of work they do, thus constructing the identity of individual's right from an early age which slowly continues to impact all throughout their growth and development. The members of any society or community are expected to perform their roles in particular ways as demanded by social and cultural traditions thereby creating and establishing norms of gender role identity. Over a period of time, these norms and practices become stereotyped and then it is considered the normal and expected behaviour from each one of its members. Although these norms and practices are

not written down and there is no rule book for these, they are generally passed on from one generation to another and continue to be practised. Therefore, it is said that *Gender is socially constructed*.

Any deviation from that normal and expected becomes unconventional, non-traditional and sometimes even defiant. However, with time roles and behaviours are evolving, resulting in 'continuity with change'. It can be seen that the age old assigned roles as bread winner for men and as home maker for women are in transition. However, in India, women have all along been engaged in production and in some societies even in marketing. In rural India, women are intensively and extensively involved in agriculture and animal husbandry. In urban areas, women are involved in construction activities or are employed as domestic labour. All these are working women and have been contributing to the income of the family in one way or the other. In many families, women are the sole bread-earners.

Despite their active participation in earning and contributing to the family resources, freedom to make decisions and vogue to independence are denied to women. Women therefore continue to remain powerless. The need of the hour is to educate and empower women and give them their rightful voice and place in society.

Women cannot be empowered until the work they do at home is valued and is considered equivalent to paid work. The work performed by women as homemakers has rarely been valued or even counted as an economic activity. However, there is a saying 'money saved is money earned'. The household chores and the domestic work that women do to support the family, in all stages of their life as mother, sister, daughter, wife and grandmother, demands energy throughout their lifetime. Such contributions help other members of the family to perform their roles and duties more efficiently. Therefore, domestic work done by women needs to be valued as an economic contribution and productive activity.

Women's participation in the workforce outside the home has helped emancipate the woman as well as improve the family's resources. Women have started participating in each sector of the economy, many of them occupying senior positions. However, this has placed a double burden on women, since they are still expected to perform most or all of their household chores and be the primary caregivers.

Issues and Concerns Related to Women and Work

Opportunities of participation by women in the labour market have declined and they have been marginalised due to the need for skilled workers. Therefore, to safeguard the interests of women, training facilities to develop skills need to be increased. Primary earning members are considered to be

men and women's earnings are considered supplementary and secondary, and even if they are sole bread earners, they do not have a similar standing in the market. Some of the other issues concerning women in modern India are stress and adverse effects on health, security and safety at work places without gender discrimination, maternity benefits and social support for child care.

Constitutional Rights, Acts and The State Initiatives: It is important to note that the Constitution of India guarantees equality to both men and women in all walks of life, including guaranteeing equal opportunity for all citizens in matters relating to employment or appointment to any office under the State and forbids discrimination in respect of any employment or office on grounds of caste, creed, colour, race or sex. It also stipulates that women workers be provided just and humane conditions of work and be protected from any kind of exploitation, and be supported and encouraged in their educational and economic pursuits. The Indian Constitution also empowers the State to make special provisions for women and children. Also, there are Acts which safeguard Constitutional rights of women such as the Factories Act of 1948, the Plantation Labour Act of 1951, the Mines Act of 1952, etc. which provide protection to women in various industrial sectors, Employees State Insurance Act (ESI Act) and the Maternity Benefit Act, 1961.

Article 16 (1) of the Constitution of India guarantees equality of opportunity for all citizens in matters relating to employment and appointment to any office under the state.

Besides this, Section 48 of the Factories Act states that creches should be maintained if more than 30 women are employed in an industry or factory. Children below six years should be looked after in these crèches which will be maintained by the industry itself. Many state initiatives were taken to improve the condition of women in employment and in need of employment. Women's cells were created in the Ministry of Labour to look at the problems of women workers. The Equal Remuneration Act for equal wages for the same work or work of a similar nature also came into force. A National Plan of Action (NPA) for women was taken up by the Department of Social Welfare to implement the Equal Remuneration Act. A working group on women's employment was also constituted by the Planning Commission for enhancing the employment opportunities for women belonging to rural areas and to review the labour laws on women's work and their participation in economic and productive activities. A steering

committee to build the data base on women's work, particularly in the rural areas, was also formed by the Planning Commission.

Over the years there has been a paradigm shift in the ways women's programmes have been initiated. During the earlier decades the programmes for women were based on the welfare approach, slowly it moved to equality of opportunity and then finally to development approach. It was realised that until women's development programmes are in full swing benefits cannot be reaped as women are part of human resource. Although in some sectors women have been achievers, economically and financially they have to march long roads to achieve equal partnership with men. The mindset has to be modern. The attitude and approach have to change to ensure dramatic transformation in the way gender issues related to work are approached in the society.

Kasturba Gandhi Balika Vidyalaya (KGBV): KGBV was initiated as a scheme of Government of India under *Sarva Shiksha Abhiyaan (SSA)*. Currently, it is subsumed under *Samagrashiksha*, an overarching scheme and the umbrella programme of Government of India for the school education. KGBV started as a scheme for bringing never-enrolled and dropout girls from rural, remote and disadvantaged sections of the society into school education till elementary level in residential schools. The scheme now has been extended till Class XII to ensure inclusive and equitable quality education at all levels of school education. All the girls enrolled in KGBVs study the Bridge Course for preparing them for the entry level. The entry level in KGBVs for these girls is Class VI. The KGBVs have been opened in backward blocks of each district. This scheme also helps in the implementation of 'Right to Education Act' (RTE) of Government of India.

Woman Entrepreneur

Kiran Mazumdar Shaw (a Biotechnologist), the Chairperson and Managing Director of Biocon India Ltd., is an eminent woman entrepreneur. She started her professional career as a trainee brewer in Carlton & United Beverages and in 1978 formed her own company, Biocon India Ltd. Under her leadership, Biocon has transformed to an integrated biopharmaceutical company with strategic research initiatives. Today Biocon is India's pioneering enterprise. Kiran Mazumdar Shaw received many prestigious awards such as ET Business Woman of the Year, Leading Exporter, Technology Pioneer and Best Woman Entrepreneur. In 1989 she was honoured with Padmashri and in 2005 with Padma Bhushan. She continues to be a model entrepreneur and a successful technocrat of global understanding.

REVIEW QUESTIONS

- What do you understand by the terms gender and sex?
- Who are home makers? What is their contribution in the economy of the family?
- How will the women get recognition in the family and the society?
- How are women guaranteed equality in India?
- What are the government initiatives in favour of women?

ACTIVITY 5

Find out about organisations or individuals in your region who are helping women to become empowered and self-reliant.

Make a scrap book and display for the entire school.

ACTIVITY 6

Collect information on women in your region who have contributed significantly to society.

ACTIVITY 7

Prepare a power point presentation (with the help of teachers) of distinguished women in Science, Technology, Mathematics, Sports, Education, Literature, Medicine and other important areas.

Organised Efforts for Empowerment of Women

Shri Mahila Griha Udyog Lijjat Papad is an organisation of, by and for women. Its objective is to provide employment to women to enable them to earn a decent and dignified livelihood. This society was started in 1959 with 7 members and in 1966 it was registered under the Bombay Public Trust and Societies Registration Act. During this period it also got recognition from Khadi and Village Industries (KVIC) as a 'village industry'. Later *Lijjat* was also awarded 'Best Village Industry'. Today their products include *Khakhra*, *masala*, *wadi*, detergent powder, *chapattis*, cakes and other bakery products. The society gives self employment to about 45,000 members all over India with the sales turnover of ₹ 1,600 crores annually including export to many countries, paving the way for women to become self-reliant.

CHILD LABOUR AND CHILDREN'S WORK

In the global scenario, in all cultures children do a variety of work, although the type of work and work conditions differ. Such work takes place along a continuum. It ranges from work that is beneficial for enhancing a child's development without compromising on the child's education, schooling, recreation and rest. Such work is generally 'light', undertaken before or after school hours, such as helping in farm work, in family business or light household errands. At the other extreme is the work that children are compelled to do under exploitative and often harmful conditions, wherein their holistic development is hampered, opportunities for education denied and are hazardous to the physical and mental health of the child.

The term 'child labour' generally refers to any economic activity performed by a person under the age of 15 years, as defined by the International Labour Organisation (ILO) of the United Nations. Child labour is a matter of global concern. Governments and international agencies have passed age regulations for work, which differ across the world. For example the legal minimum age for all work in Egypt is 12 years, in the Philippines and India it is 14 years and in Hong Kong, 15 years. ILO conventions allows light work at age 12 or 13, but hazardous work not before 18 years. The ILO has established a general minimum age of 15 years in countries where compulsory schooling is completed by 15 years. This is the most widely used yardstick when establishing how many children are currently working around the world. The World Bank projects that over 40 million children are employed. In India alone, more than 15 million children in the age group of 5 to 14 years are involved in various types of work, both remunerative and non-remunerative, including domestic work.

Not only is the age a matter of concern, but the type of work and work conditions are important considerations. Internationally, experts have identified hazards that include working with unsafe machinery, hazardous substances (like insecticides, herbicides), heavy lifting and extreme temperatures. In deep-sea fishing, children are made to dive to depths of up to 60 metres to attach nets to coral reefs, risking exposure to high pressure and attacks by carnivorous and poisonous fish. Children may be involved in manufacture of glass bangles, matches, fireworks or bricks where they may be exposed to noxious fumes and radiant heat from the molten substances. Stepping on or handling hot broken glass; exposure to hazardous chemical mixtures; stuffing cracker powder into fireworks, risking fire and explosion; exposure to silicate, lead and carbon monoxide; carrying excessive weights; and burns from ovens through the processing of clay in the making of bricks are all hazardous. In the Child Labour Act of our country, more than 50 professions that are hazardous for children

have been listed. This includes domestic work in homes and working in the hospitality sector, specifically in hotels and restaurants.

It is not uncommon in many homes in India to hire young girls as domestic workers. Their education, health as well as physical and emotional well being are likely to be neglected and jeopardised. As citizens of this country and from the perspective of human rights, it becomes our duty to help in stopping such practices. Communities need to be sensitised towards the issues of child labour, harassment of domestic workers. We must be prepared to help the girl child, and her immediate family, to pursue her school education as well as to equip her with life skills and other skills for self reliance.

Several reasons at societal and family levels push children into work. They include poverty and family debts, rural-urban migration of the families, dropout from school, domestic abuse, loss of parents, attraction towards the world of “glamour”, truancy, among many others.

Two UN agencies have directed their attention to the prevention of child labour worldwide: the United Nations International Children’s Emergency Fund (UNICEF) and the International Labour Organisation (ILO). They have helped define the problems and develop international legal frameworks to correct them. As a result of their work, we now have several international treaties (or conventions) banning child labour and identifying concrete legal measures for governments to take. There are about 20 such international treaties against child labour. Once a country ratifies a convention, UN bodies monitor compliance and hold countries accountable for violations. The need of the hour is strong enforcement at the national level. Among other things, governments are expected to:

1. introduce action programmes to remove and prevent the worst forms of child labour;
2. provide direct assistance for the rehabilitation of children and their social integration;
3. ensure access to free education;
4. identify children at special risk;
5. take account of girls and their special situation.

Governments must also report regularly to the ILO regarding the application of the Conventions and be accountable for all allegations of violations.

The strategies employed in different nations range from policy and legal provisions made by the government to non governmental and voluntary efforts by groups and individuals, many of them involving youth and students in the advocacy initiatives.

Students have been involved in raising funds to build schools and treatment centres for child workers. For example, Free the Children, is a Canadian-based student organisation formed by Craig Kielberger a 13-year old student. This organisation has raised funds to build schools in South Asia (<http://www.freethechildren.org>). Many corporate bodies have become aware and are consciously making efforts to eliminate child labour.

ACTIVITY 8

Find out if the Government of India has ratified the conventions concerning child labour (A status of countries and their actions concerning Convention No. 182 is available at <http://www.globalmarch.org/convention-campaign/index.html>).

ACTIVITY 9

Identify hazardous occupations in which children in India are involved.

ACTIVITY 10

Identify local initiatives or campaigns to prevent child labour.

REVIEW QUESTIONS

1. What do you understand by child labour?
2. Describe the life and plight of any child whom you have seen working as a domestic labourer or as a worker in a *dhaba* or a small restaurant.

WORK AND THE ELDERLY

All over the world, 'old age' is signified by chronological age. By and large, particularly in India, 60 years is considered to be the criterion to categorise adults as 'older adults' or 'senior citizens'. At this juncture, it is important to note that 'old' may be considered derogatory and therefore terms like 'senior citizen', 'elderly', 'aged' are to be preferentially used. For working people (men and women) the significant indicator of old age is retirement

from active work. In general, society views ageing with fear and reluctance. One of the biggest misconceptions is that older persons should retire from active work. Other misconceptions are evident with some employers, some of which are : the aged cannot be trained in new processes or technology, they are not as efficient or as productive as younger workers, they get sick and are absent more often than younger workers, and they are comparatively more rigid than younger adults.

In fact, just chronological age does not signify inability to work further. Advances in medical and health care and technological developments have not only enhanced longevity but also help persons to remain physically healthy, mentally alert and capable of productive work.

Many senior citizens would like to continue working beyond the traditional retirement age for several reasons such as:

- Enjoyment in work.
- Gives them self-esteem and self-respect.
- Allows them to make meaningful contribution to society.
- Life of leisure and recreation alone is not satisfactory to some.
- For some it may be an economic necessity (While there are a number of individuals who can retire but *choose* not to, there are also a vast number of individuals who want to retire but cannot afford to).
- The desire to remain independent.

There are innumerable senior citizens who are healthy, active and mentally alert and are contributing immensely in different ways. It has been observed that older workers can indeed be trained to perform new tasks and it is useful to employ older workers for one or more of the following reasons:

- They are experienced and dependable.
- They introduce different forms of style and motivation compared to their younger coworkers.
- Many older workers may accept compensation in kind or perks rather than salary or financial incentives.
- They are less likely to leave and move on to other jobs very easily.
- They are less likely to indulge in irresponsible absenteeism.

A counter argument sometimes offered for continuance of elderly in the work force is that the succeeding generation will be crowded out of the labor market by elderly workers because there is excess supply over demand. Further, it is sometimes felt that they may 'block' promotional opportunities for younger coworkers because some will presumably remain with the same employers and in the same positions. Though it may be true to a small extent, in reality, it is worthwhile to engage the

seniors productively not only because they provide continuity but also in specialised fields, their depth of knowledge, experience and wisdom can have a significant and positive impact. In addition, some employers have found that senior workers tend to offer a ‘calming effect’ on the younger employees.

The older population faces several problems ranging from absence of assured and sufficient income to support themselves and their dependents, ill health, loss of social role and recognition and non-availability of opportunities for creative use of free time. As people live longer and into much advanced age (say 75 years and over), they need more intensive and long term care, which in turn may increase financial stress on the family.

Traditionally, Indian families respected and provided care for the elderly. Thus older members of the family were normally taken care of in the family itself. The traditional joint family system and social networks provided an appropriate environment in which the elderly spent their lives. In spite of several economic and social problems, the younger generation generally looked after their elderly relatives. However, in the modern world, industrialisation, urbanisation, migration for educational and occupational opportunities as well as growth of individualistic philosophy have resulted in a decline of care of elders by the younger family members. Though the young generation takes care of their elders, living conditions and the quality of life of the elderly differ widely. All of these give rise to a sense of powerlessness, helplessness and low self-esteem. Women, especially those widowed and living alone, are found to be the worst off among the poor and vulnerable.

Therefore, it is essential to address the needs of the elderly. On the one hand, there is a need for changing views about the elderly in society; on the other, it is crucial to provide better care facilities and services, enabling both generations to adapt to changes arising from ageing. In response to these problems, the Government of India formulated the National Policy on ageing in 1999. The Central Government implemented the National Old Age Pension (NOAP) scheme which provides for a pension every month to old people living in conditions of destitution. The NOAP scheme is in operation all over India and reports indicate that the most vulnerable sections of Indian society have benefitted from this scheme. In addition State Governments have introduced schemes for old age pension although the criterion of eligibility and the amount of pension given differ from State to State.

For older persons, life can become meaningful when they have a purpose and satisfying relationships. Working offers unparalleled opportunities to stretch talents, serve others, and engage in meaningful relationships

with people of all ages and cultures. Outside the home, the workplace is typically most people's primary community. Given these benefits, it is crucial to engage senior citizens in meaningful work to the extent possible. This emphasises the numerous opportunities for youth to work with and for senior citizens, in various spheres. These are generally referred to as 'intergenerational interactions and activities', which have been found to be beneficial to both generations. The programmes that are implemented should focus on making senior citizens active and empowered individuals with self-esteem and a positive self-image.

ATTITUDES AND APPROACHES TO WORK, LIFE SKILLS AND QUALITY OF WORK LIFE

Attitudes and Approaches to Work

The attitude towards work is not only about the work / job itself. It is also about how any individual perceives one's own work situation, handles the circumstances and demands of the job and the various tasks entailed. An individual's experience of job satisfaction or dissatisfaction is considerably influenced by their attitude, rather than being determined entirely by the job *per se*. Further, an individual's perception can be affected by comparisons they may make. For instance, if a person compares only the salary s/he receives with that of another, without taking into account the work responsibilities, the qualifications required, the work output, sincerity and dedication of the other person, there is scope for dissatisfaction. On the other hand, under realistic scrutiny of all aspects (both positive and negative) of one's own job, the possibility of satisfaction and happiness is greater. Most people spend a considerable proportion of time everyday at work. Therefore, the importance of work routines being established along with good health practices such as eating healthy, balanced diets, sleeping well and using leisure time proactively should be emphasised. But often, some people perceive work as something they have to 'do somehow or anyhow' and therefore are unable to enjoy or even think of enjoying the work. However, when a person perceives his/her 'work' as a source of energy, fulfillment and learning, job satisfaction is ensured.

On the other hand, some persons enjoy their jobs, look forward to challenges, handle difficult tasks with a positive outlook and this makes them feel good about their jobs. Similarly, opportunities for progress in their career and to use their abilities, skills and knowledge contribute to personal happiness and the 'quality of working life' of the organisation.

Quality of Work Life

Quality of Work Life (QWL) of employees is considered important by organisations. In this approach, the employees are considered to be ‘assets’ and it is believed that people perform better when they are satisfied with their work conditions. It is generally accepted that satisfying employees’ social and psychological needs is as important as satisfying their economic needs to help motivate them. It incorporates several perspectives which are not only work-based factors such as job and career satisfaction, satisfaction with pay and relationships with work colleagues, absence of stress at work, and opportunities for participative decision making, balance between work / career and home and general feelings of well-being.

All human beings like to survive and thrive in an environment that encourages and motivates them to do all the good work that they are capable of. Therefore, it is crucial to have a culture of creating happy and healthy work environments, not only in the physical and social sense but also in the deeper psychological / mental and emotional aspects. A healthy work environment is a positive work environment. Such an environment can be created by focusing on:

- Paying adequate attention to the individual employee’s needs and expectations in addition to organisational needs
- Building a positive work climate
- Motivating individuals
- Being fair and treating people equally
- Ensuring and facilitating technical competence
- Providing an attractive and safe work environment
- Making the job interesting and challenging
- Matching the person to the task
- Delegating wherever necessary
- Fostering team spirit and team responsibility
- Developing employees through training, building confidence, feedback, encouragement and praise, support, positive reinforcement and involvement
- Empowering employees, giving them authority wherever appropriate
- Sustained opportunities for self-development

All of this can help the employer to boost the morale of those involved in the organisation/ work place. In short, any wise employer / manager recognises that people are assets and are the ultimate valuable resource. Hence creating an environment where employees feel a sense of loyalty to

the organisation and organisational development is as important as self development.

It is important not only to focus on the pay package but also to look at the entire life holistically. It is not how much you make that matters. What is important is whether or not you are able to live your life in a happy way. Look at your life as a whole. Think about your free time, your family, your friends, etc. This will help you to reach retirement age without remorse and regret about why you did not spend them on things that were more important.

One of the prerequisites is to possess and hone certain life skills that will help us to function effectively, with minimum stress and maximum productivity in personal and professional lives.

Life Skills for Livelihood

Life skills are abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life.

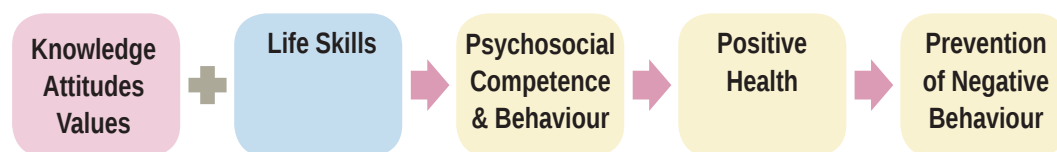
Why are life skills important? Life skills help people to deal with the demands and challenges of everyday life. They are important because they apply across the life span and promote and protect life, health and well-being in all situations. According to the World Health Organisation, life skills are thinking, coping, and social skills, which are abilities that can enhance people's interactions with others and with the environment, and which may even give rise to greater individual resilience in situations of adversity.

Ten core sets of skills have been identified by experts:

Self-awareness	Empathy
Communication	Interpersonal relationships
Decision making	Problem solving
Creative thinking	Critical thinking
Coping with emotions	Coping with stress

Life skills are abilities that enable people to behave in healthy ways, particularly in situations that challenge them. It is important to develop

appropriate skills as indicated above, in order to prevent manifesting unhealthy or negative behaviour. Appropriate and adequate knowledge, attitudes and values enable one to develop healthy life skills, and prevent negative health behaviour as indicated in the conceptual model below:



Life skills enable people to act in ways that can contribute to personal and social changes for the promotion of their own health and development, as well as that of the communities in which they live. They are needed by individuals to function effectively and constructively in society. They include personal and social skills and help the person to function confidently and competently in their families and in society. Life skills are competencies and actual behaviours which cannot be taught in a classroom; rather experiential learning helps people to acquire them.

Improving One's Own Work Life

Improving work life in totality is crucial for the organisation. However, it is more vital for each individual to consciously improve one's work life and thereby ensure job satisfaction and enhanced quality and quantity of output. Quality of work life from the perspective of the employee/worker is not so much about the job alone but also about how it is perceived by him/her. Towards this it is important to look at one's work as a source of energy, fulfilment and learning. Some general tips in this context are given herein:

- *Develop healthy personal habits.* Take care of one's body, mind and spirit, maintaining a healthy lifestyle, by eating a wholesome diet, taking adequate and appropriate exercise and getting enough sleep. Such a lifestyle is helpful to face challenges and pressures at the workplace.
- *Be empathetic and compassionate.* Interacting with peers, subordinates and supervisors is inevitable and calls for empathetic approach, which in turn will yield positive outcomes.
- All persons at work have to remember the interdependence on each other, personally, professionally and psychologically. Positive attitudes and behaviour and interactions with peers, subordinates and supervisors will generate goodwill all round. People who help

each other tend to experience greater satisfaction and reward and help a person to fulfil her / his own needs. Good communication and interpersonal skills are vital for successful completion of tasks and career development.

- It is important to maintain loyalty and commitment to the organisation and to be *professionally ethical* at all times.
- *Encourage partnerships and work as a member of a team.*
- People who help each other in this way tend to experience greater satisfaction and reward. Interactions with others should generate results for mutual benefit. Work in collaboration with others, respecting and recognising their contributions and achievements.
- It is wise to *be responsive to situations and not reactive*. For example, when faced with a reprimand at work by a senior, it is appropriate to respond by examining the situation realistically and calmly, rather than react with justifications and emotional outbursts. If the reprimand is deserved, one should take corrective measures, including apologising, if necessary.
- *Flexibility, adaptability and problem-solving attitude and skills are core abilities* essential in the work arena, whether you are self-employed or working for others.
- *Be a good citizen and create a healthy community around you.*
- People who follow these tips tend to attract like-minded persons. Together, they can often create a community of like-minded folks who strive to get the job done while serving everybody's needs. For job satisfaction, be a good citizen within your organisation, recognise others for their achievements and work in collaboration with others to effect responsible change.
- *Learn from the lessons of life.*

Job satisfaction is all about taking those day-to-day challenges, pressures and upsetting situations and turning them into life lessons that allow you to grow and move on as a better, more fulfilled person and professional.

This balance between life and work is not easy to achieve but the ability to positively adapt to societal and environmental change is essential. In any occupation, core abilities/essential workplace skills are the basic requirements. They cannot be taught as 'academic lessons' in schools or colleges, but they are vital to enable persons to become competent, and have to be acquired and honed as one develops as a person.

REVIEW QUESTIONS

1. Explain the terms:
 - (a) Quality of work life
 - (b) Life skills
2. What is meant by healthy work environment? How can it be created?

Essential Soft Skills at Workplace

- *Working productively* — The worker applies effective work habits and attitudes in his/her job and tasks. This requires sufficient knowledge, skills and expertise as well as experience. Productivity is also influenced by enthusiasm, zeal and dynamism. Involvement with the job and sense of belonging to the organisation are important factors.
- *Learning effectively* — Every individual requires some necessary skills in reading, writing, and computing as well as skills in acquiring information within the field, and ability to use learning tools and strategies. Equally essential is the motivation to work hard and update oneself to keep pace with advances/developments in one's field in order to be acclaimed/ renowned in the field.
- *Communicating clearly* — Apply appropriate writing, speaking, and listening skills so that one can precisely convey information, ideas, and opinions.
- *Working cooperatively* — Every individual must work with others to complete tasks, solve problems, resolve conflicts, provide information, and offer support. Cultivate a sense of belonging to the organisation
- *Thinking critically and creatively* — Every successful person applies the principles and strategies of analytical thinking, critical evaluation, being innovative and creative.
- *Other skills required* — Concentration, alertness, presence of mind, tactfulness, empathy, soft skills, abilities to train, to delegate and to get others to do their work, forethought and vision, and the ability to multitask.

Work, Ethics and Dignity of Labour

Work, whether a paid job or unpaid work in the home, as a caregiver, or in a volunteer capacity, is fundamental to human nature. Every human being is infinitely worthy; however, in modern times wealth is being given more importance. Whatever the type of work done, or the position held, or financial status, every person deserves respect. The Universal Declaration of Human Rights states that all human beings are born free and equal in dignity and rights. Every individual, through his or her share of work, however big or small, contributes to the betterment of the society.

Dignity of labour means that the person takes pride in whatever she/he does. Abraham Lincoln was the son of a farmer and rose from a penniless boy to become the President of the United States of America. Mahatma Gandhi was a shining example of the dignity of labour. He did sweeping, scavenging and cleaning in his 'Ashram' in Wardha. He never felt degraded or insulted in doing the jobs that some people consider inferior or menial. He used to clean his own toilet, to demonstrate the dignity of labour.

In this context, it is necessary to remember that whatever a person does should be driven by values and ethics. Values and ethics provide behavioural rules. Values are beliefs, preferences, or assumptions about what is desirable or good for humans. Values affect how we practise. There are six important values: service, social justice, dignity and worth of all persons, importance of human relationships and integrity.

Ethics are a formal system or set of rules which are explicitly adopted by a group of people, e.g., professional ethics, medical ethics. Ethics can be defined as 'the rules or standards governing the conduct of a person or the members of a profession'. Being ethical at all times, earns respect of one's colleagues or peers and encourages them also to be ethical. At the workplace, values and ethics help to reduce waste of time and money and simultaneously increase employee morale, confidence and productivity.

In all work settings, generic norms of ethics and dignity are applicable. However, young workers/children and senior citizens as well as the female workforce are special groups and their presence in the workplace has many implications and ramifications in terms of their own quality of life as well as the society at large.

REVIEW QUESTIONS

- What is meant by dignity of labour?
- Explain briefly the role of values and ethics in professional life.

Performance, Creativity and Innovation

Performance can be explained as accomplishment of a given task. Generally performance is measured against standards of accuracy, completeness, cost and speed. Performance of human beings is generally determined by desire and motivation, ability and the capability to do the job. The work environment, including the tools, materials, and information needed to do the job, also influence our performance. The abilities to be resourceful, creative and innovative are closely linked to good performance.

Creativity in individuals is influenced by motivation (your internal motivation and passion to develop something new, different and original), resources (your knowledge, expertise, access to information) and creative thinking. Creative thinking skills are the capacity to think ‘out of the box’ and to innovately put existing ideas together in a new combination.

Resourcefulness is the ability to use available resources/ materials ‘wisely’, efficiently or ingeniously /creatively.

Creativity is the ability to change the usual and familiar to the NEW, NOVEL, ORIGINAL

Innovation refers to ‘new ideas’ being effectively and successfully put to use.

The outputs of creativity can be varied and may include an artistic design, a musical composition, perhaps even a slogan, a better mousetrap, a comfortable chair, a theory on aerodynamics, a medical discovery, a faster way to cook, or a new weapon to destroy germs.

Creativity at work can be stimulated by one or more of the following:

- Freedom in deciding work to do or how to do it
- Challenge to work hard on important projects
- Resources needed to do the work
- Encouragement from good work models
- Support from the work teams.

Ways to Develop and Enhance Creativity	Barriers to Creativity
◆ First hand experiences ◆ Playing games ◆ Solving puzzles ◆ Hobbies ◆ Fine Arts ◆ Reading ◆ Writing ◆ Brainstorming ◆ Observing and sharpening one's senses ◆ Asking questions ◆ Thinking and imagining Even 'dreaming DREAMS'.	◆ Self discouragement ◆ Fear of failure ◆ Fear of criticism ◆ Distrusting one's own creative potential ◆ Lack of perseverance ◆ Poor observation ◆ Being judgmental ◆ Passivity: it is easier to be one of the crowd than the ONLY ONE. ◆ Restrictive home/school conditions.

*The human mind is like a parachute;
It works only when it is open.*

Innovation implies to do something that is routine in a better and different way. Thus, innovation may mean renewal or altering an existing product or service. The prerequisite for innovation is the dissatisfaction with the current status and a creative mind, working to improve and improvise. It can also be explained as an existing idea for a laterally different purpose or application. Whatever the innovation, it is generally 1 per cent innovation to 99 per cent perspiration.

Job Satisfaction

Job satisfaction is a complex and multifaceted concept, which can mean different things to different people. Job satisfaction is usually linked with motivation, but the nature of this relationship is not clear. Satisfaction is not the same as motivation. Job satisfaction is more an attitude, an internal state associated with a personal feeling of achievement, either quantitative or qualitative. In recent years attention to job satisfaction has become more closely associated with broader approaches to improved job design and work organisation, and the quality of working life movement.

Research on job satisfaction shows that those individuals who are more satisfied in their jobs are self-confident, feel competent in work and life. Jobs that offer recognition, variety in skills, give a sense of personal identity, promote a sense of achievement, give a sense of responsibility, freedom and independence of action and opportunities for advancement are likely to give more satisfaction. Employers can promote job satisfaction among their employees through recognition of their contribution, training and feedback, encouraging positive relationships in the workplace. Further, impressing upon the employees about the value they provide help them to have a sense of mission, vision and passion for their work. Employers need to recognise that the management style and culture, employee involvement and empowerment influence job satisfaction. The benefits of job satisfaction for the employer and the organisation are primarily better performance and productivity, more output and lower absenteeism and turnover of employees. For the employee, job satisfaction leads to a sense of achievement, gives self-confidence and promotes health, well being and life satisfaction.

REVIEW QUESTIONS

1. How can creativity be enhanced?
2. Explain what you understand by the term innovation.
3. What is job satisfaction and why is it important?

ACTIVITY 11

Students to be acquainted with information on innovators (local, national, international) and efforts that are being made at regional, national, international fora/levels to encourage innovation. [Suggestion: the electronic and print media, resource persons, organisations, films, video clippings, etc., may be used].

Productivity, Time Management and Multitasking

Productivity can be explained as the efficient use of resources, such as labour (manpower), capital (money), land, energy, materials, information, in the production of various goods and services. It is a measure of the output in relation to per unit of input. For example, labour productivity is typically measured as a ratio of output per working hour which is an input. In fact, it implies more effective use of human and capital resources. Productivity can be considered as a comprehensive measure of how organisations manage to meet two attributes; a) efficiency i.e., how effectively resources are utilised for useful output; and b) effectiveness i.e., what is achieved compared to what is possible/feasible..

It is truly said that ‘there is no human activity that does not benefit from enhanced productivity’. Thus productivity is relevant to all organisations whether their output is a product(s) or service(s). Globally, the concept of productivity is being increasingly linked with quality. Improvement in productivity helps ensure a better standard of living for individuals and society. It is being increasingly recognised that rising productivity and improving quality of work life tend to go hand in hand. Thus, the role of productivity in national welfare is widely accepted.

Productivity largely determines how competitive a country's products are internationally. Low productivity results in inflation, an adverse balance of trade, poor growth rate and unemployment. In developing countries like India, the vicious circle of poverty, unemployment and low productivity can be broken by increasing productivity. This can be achieved by facilitative and favourable social, political, cultural, educational and motivational work environment. People in an organisation are the principal resource and the central factor determining productivity. Hence, the following can be used to enhance productivity at the individual level and ultimately at the organisational and national levels – education and training, fostering and developing healthy/positive attitudes to work, motivation to perform better, rewards and incentives, communication, job security, health security, improved work methods, use of technology. Productivity enhancement is not just ‘doing things better’ but rather doing the ‘appropriate things better’.

Time Management: Time is one of the most valuable resources. Managing it means more than just managing yourself in relation to time. Rather it means setting priorities, being willing to change those habits or activities that cause waste of time. It may also require you adopt habits and methods that enable you to make maximum use of time. With good time management skills you can control your time, stress and energy. You can maintain balance between your work and personal life. This enables you to find enough flexibility to respond to new opportunities/surprises/unexpected

events more calmly. It is not how much time one has, but rather the way one uses it.

ACTIVITY 12

Using the internet, students should search for tips on time management. It is recommended that the search be directed as “Time Management Power Point Presentations”. Find out the most useful tips for the forthcoming examinations and prepare a checklist for yourself.

Teacher may organise a guided discussion.

Multitasking is regarded as an essential skill at the workplace in these modern times. Life in the 21st century has become increasingly complex and involves doing many different things/tasks simultaneously. Attempts to multitask can be honed and polished into a fine skill. It involves having diverse skills and making optimum use of them. Multitasking began with homemakers and naturally with women but has now become essential at work desks and chambers in most offices and organisations. Every person is required to multitask; some are more adept at this than others. Today’s professionals are valued for their ability to handle information and manage time efficiently. Success in a career is gained or lost by soft skills and the ability to handle large and varied workloads. The ability to quickly process and synthesise information and turn it into actions is one of the most emergent skills of the professional world today. Time management is important, and productivity is at a premium - therefore multitasking is vital.

Achieving or completing a number of tasks in less time is a challenge that all of us face, and we should actively look for ways and tips that help us in accomplishing this. Therefore, students who are the future professionals need to develop such skills by practising them, the best time to start being right now.

- Make a list of what you have to do and prioritise items. Start with the most important task.
- Doing the difficult things first helps to finish it faster rather than procrastinating and being worried about it.
- Focus on the task at hand and give it your full attention to be effective and efficient.
- Take a short break occasionally.

- Reduce any kind of interruptions. Constant interruptions, especially for relatively unimportant matters, make one lose focus.

WORK AND WORK ENVIRONMENT

All human beings like to survive and thrive in an environment that encourages and motivates them to do all the good work that they are capable of. Therefore, it is crucial to have a 'culture' of creating happy and healthy work environments - not only in the physical and social sense but also in the deeper psychological / mental and emotional aspects. A healthy work environment can rightly be called a positive work environment. Such an environment can be created by focusing on:

- Paying adequate attention to the individual (employee needs and expectations) in addition to organisational needs.
- Providing an attractive and safe work environment.
- Matching the person to the task.
- Ensuring and facilitating technical competence.
- Making the job interesting and challenging.
- Fostering team spirit and team responsibility.
- Being fair and treating people equally.
- Building a positive work climate / ethos.
- Motivating individuals and providing sustained opportunities for self-development of employees.
- Developing employees through training, building confidence, feedback, encouragement and praise, support, positive reinforcement and involving them.
- Empowering employees, giving them authority wherever appropriate.

All of this can help the employer to boost the morale of those involved in the organisation / workplace. In short, any wise employer / manager recognises that people are 'assets' and are the ultimate valuable resource. Hence creating and providing the climate / environment where employees feel a sense of loyalty to the organisation and organisational development is viewed as important as self-development.

In this context, a great deal of attention has been focused towards occupational health and safety. Globally, legislative measures concerning vital issues of occupational safety and health are being introduced and enforced. Two international organisations, actively involved in these efforts are the International Labour Organisation (ILO) and the World Health Organisation (WHO). Worldwide, this movement towards health

and safety has included the role of ergonomics in the workplace, making it a specialised area of research and development activities.

What is Occupational Health?

The modern definition of Occupational Health (ILO and WHO) is: *“The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations – total health of all at work”*. It represents a dynamic equilibrium between the worker and his occupational environment. It is dedicated to identifying and preventing ill health in the workplace. Through appropriate occupational health monitoring, it also ensures that an individual does not have a specific medical condition that would be made worse whilst in the working environment. The purpose of ensuring occupational health is as follows:

- To maintain and promote the physical, mental and social well being of the workers
- To achieve maximum human efficiency and machine efficiency
- To reduce occupational hazards and accidents
- To prevent occupational diseases and injuries
- To reduce absenteeism due to illness and enhance productivity
- To adapt the work place and work environment to the needs of the workers i.e., application of principles of ergonomics
- It should be preventive rather than curative.

In short, the goal of occupational health care is a healthy and safe working environment, a well-functioning working community, prevention of work-related diseases as well as the maintenance of employees' working ability and functional capacity, and promotion of their health.

This involves ensuring that:

- the premises are safe
- the machinery and materials are safe
- systems of work, the working environment and facilities are safe
- information, instruction, training and supervision is provided to employees on safety matters
- employees' working ability vis – a – vis the load is assessed and their health status is monitored
- above all, hazards are eliminated / reduced to the extent possible.

Generally the aspects of occupational and personal safety are related to ergonomics of workstations, noise levels, industrial hygiene, protection against electric shock, protective equipment, radiation protection, safety

of machinery, vibration and shock, protective clothing, protection against falling and slipping etc.

What are Occupational Hazards?

They are viewed as ‘sources or situations’ with a potential for harm in terms of injury or ill health, damage to property, damage to the workplace environment, or a combination of these. Occupational hazards are of various types: physical, chemical, biological, mechanical and psychosocial. Table 1 lists hazards in each category.

Table 1: Different Types of Occupational Hazards

Physical	Chemical	Biological	Mechanical	Psychosocial
Heat Fever, cramps, exhaustion burns	Toxicity through inhalation, ingestion, skin absorption.	Bacteria Tetanus, Tuberculosis, Anthrax	Injuries Falls, cuts, abrasions, concussions, contusions	Psychological & behavioural changes Lack of job satisfaction, insecurity, poor interpersonal relations, work pressure, ambiguity, hostility, headache, body-ache, aggressiveness, anxiety, depression, alcoholism, drug addiction, sickness, absenteeism.
Cold Frost bite	Asphyxiants Carbon monoxide, hydrogen sulphide	Viruses Hepatitis, AIDS	Ergonomic Disorders Musculo- skeletal disorders (MSDs), Cumulative- trauma- Disorders (CTDs)	
Noise Occupational deafness	Irritant gases - Ammonia, sulphur dioxide	Protozoa & Parasites Malaria, Hookworms, tapeworms		
Radiation Cancer, Leukemia, Aplastic anemia	Inorganic Dust coal dust, silica, asbestos.	Fungi		
Electricity Burns, shocks	Organic Dust cane fiber, cotton dust, tobacco, grain dust			

It is clear that different work environments can pose different types of hazards and risks for health of the employees. Therefore it is important to identify and address the hazards with appropriate safety measures,

not only by the employers but it is equally important for each individual employee to be responsible for the safety and welfare of self and all persons working in the organisation as well as the environment.

What are the Benefits of Occupational Health Care and Safety Measures?

Benefits are both for the employees as well as the organisation as a whole/ employer. For the employees / workers, the benefits include:

- Better health and earning capacity.
- Better quality of work life.
- Prevention of accidents and any temporary or permanent disability.
- Improved morale and enhanced productivity.

For the organisation / employer there are several advantages that translate into financial benefits due to:

- Greater productivity as a result of reduced absenteeism due to sickness by preventing occupational diseases / other work-related illnesses.
- Increased profitability by keeping the workforce healthy.
- Enabling the organisation to focus on core business.
- Reduced risk and cost of litigation.
- Reduced medical and legal claims, reduced workers' compensation costs.
- Better staff attendance and retention.
- Improved staff motivation and performance.

Accidents are more expensive than most people realise because of the hidden costs. Some costs are obvious — for example, Workers' Compensation claims which cover medical costs and payments for an injured or ill worker. These are the direct costs of accidents. Besides this, there are costs to train replacement worker(s), repair damaged property, investigate the accident, implement corrective action, and pay for the insurance coverage. Indirect costs of accidents include schedule delays, increased administrative time, lower morale, increased absenteeism and poorer customer relations.

Several large organisations take care to include pre-employment screening. This helps the employer to ensure that people are fit for the job for which they are to be employed and to place new employees appropriately in relation to their physical capabilities.

Effective occupational health and safety programmes focus on six elements:

- Assessment of worksite safety and job hazard analysis. Job safety analysis should form a base for the comprehensive survey. This involves studying and recording the steps of a job in order to identify existing or potential job hazards and to determine the best possible way to perform the job to reduce / eliminate hazards (Table 2 shows symbols used for some hazards). It includes analysing planned and new facilities, processes, materials and equipment.
- Prevention and control of hazards: In industries it is important to maintain a record (inventory) of all chemicals and hazardous materials in the plant. For many industries, a survey of noise levels, air samples analysis, and a review of ergonomic risk factors are required.
- Training of staff regarding health and safety issues. The hazard communication program should be developed, implemented and periodically reviewed.
- Commitment of the Management: Management believes in safety and health culture on the job as an important company goal along with other organisational objectives such as cost control, quality, and productivity.
- Involvement of the Employees: Individuals within the organisation believe they have a right to a safe and healthy workplace and accept personal responsibility for ensuring his / her own safety and health. They also believe that s/he has a duty to protect the safety and health of colleagues.
- The organisation should provide health counseling including physical and mental health, stress management as well rehabilitation programmes on all aspects – medical, social, educational, vocational as per the problems and needs of individual employees.

Table 2: Indications of Danger and Symbols for Substances and Preparations Dangerous for Supply

<i>Indication of danger</i>	<i>Symbol-letter</i>	<i>Symbol</i>
Explosive	E	
Highly inflammable	F	
Toxic	T	
Harmful Irritant	Xn Xi	
Corrosive	C	
Dangerous for the environment	N	

ERGONOMICS

Ergonomics is the study of humans at work, in order to understand the complex interrelationships of people with their job requirements, methods of working, tools/equipment used and the environment. Ergonomics is derived from two Greek words — ‘ergon’ (work) and ‘nomics’ (natural laws). It may also be spoken of as ‘Human Factors Engineering’. In short, ergonomics is the study of work with the primary goal being to adapt the work environment to the worker. The objective is to generate working

conditions that are not hazardous to human health, are acceptable to the workers / the work force and are optimal for work output and productivity.



Ergonomics is “Adjustment of human and Machine”. It involves application of human biological sciences combined with engineering science to achieve optimum *mutual adjustment of human work*, with the benefit being measured in terms of human efficiency and well being. Tools, machines and workstations are designed to fit the work so that stress and problems reduce stress and health problems.

Important aspects that are considered by ergonomists are in relation to worker capacity (both physiological and psychological), task demands (comprising nature and complexity, force required, duration, posture) and the work environment (noise, humidity, vibration, light, temperature). The science of ergonomics is set on the four pillars, namely anthropometry (body size and measurements), biomechanics (musculoskeletal activities and forces exerted), physiology and industrial psychology.

Need for ergonomics:

Use of ergonomics in the workplace is important for :

- Improving safety and health by
 - reducing number and severity of workplace injuries.
 - reducing possibility of accidents due to human error.
- Improving job effectiveness by
 - increasing productivity
 - reducing errors
 - eliminating or reducing injuries

Ergonomics: An effective productivity tool that addresses matters related to:

- workplace / workstation design
- task design / design of work methods
- equipment design
- facilities
- environment

- Improving job effectiveness by
 - increasing job satisfaction through comfortable working conditions.

Benefits of Ergonomics

- ◆ Reduces risk of injury and accidents
- ◆ Increases productivity
- ◆ Reduces mistakes and need to do the work again
- ◆ Increases efficiency
- ◆ Decreases absenteeism due to ill health / accidents / stress
- ◆ Improves morale of workers.

The importance of ergonomics can be illustrated with a simple example. For a person who does office work, sitting on a chair that does not conform to ergonomic safety specifications can cause back pain. According to ergonomic principles, it is necessary that the chair height and stand be adjustable to the user's height and body measurements. The number of chair legs must be suitable to its size to avoid falling.

Any ergonomics intervention must be viewed in light of its effect on productivity, and the best ergonomics solutions will often improve productivity. Simply put, reducing unnecessary or awkward postures and exertions almost necessarily reduces the time it takes to complete a given task, thus improving productivity. Creating a safe and productive work environment is critical for any work place. Employees represent an organisation's most important asset. When a task is matched with the ability of the people who will perform it, they will make fewer errors and produce less waste. Ergonomic design considerations have been shown to influence employee productivity and retention.

We have discussed at length various employment-related aspects that are pertinent to livelihoods and productive professional careers. At this juncture, it is necessary to also direct attention to the exciting possibility of self-employment, personal enterprise and entrepreneurship. Self-employment and innovative entrepreneurial ventures can be challenging, stimulating and highly rewarding; hence they merit attention as an avenue for building satisfying careers.

ENTREPRENEURSHIP

Entrepreneurship is the act of creating a new and innovative enterprise/ product or service. The function of entrepreneurs is to change the pattern of a production or design of a product through innovations / invention or even attempting new technological methods/modifications for producing a new commodity or producing an old one in a new way. An entrepreneur is a person who undertakes the creation of such changes in an enterprise or business. Entrepreneurs use their acumen to assemble resources and/ or finances and aim to make a livelihood. This may even result in new organisations or may be part of revitalising existing organisations.

An entrepreneur is a person who can take risks for converting a novel idea into reality. An entrepreneur is innovative, creative, organised, and risk taker. India has excellent examples of entrepreneurs who had the vision and thought e.g., Mr. Narayan Murthy, JRD Tata, Dhirubhai Ambani to name only a few.

Entrepreneurial activities differ depending on the type of organisation that is being started. Entrepreneurship ranges from small individual projects / micro units, sometimes involving the entrepreneur only part-time, to major undertakings which give jobs to many people in addition to the entrepreneur himself / herself. Many kinds of organisations now exist to support aspiring entrepreneurs, including government agencies, scientific institutes and organisations, financial institutions, such as banks and some voluntary organisations.

Entrepreneurs make things happen:

- May be a concept, product, policy or institution.
- They become champions of new process(es), engineers of change

CHARACTERISTICS OF ENTREPRENEURS

An entrepreneur must necessarily have some personal attributes that enable him to take on the challenges of an enterprise. These include:

- Willingness to work hard
- Knowledge and skills for planning and implementation
- Skills of management of finances, materials, personnel and time

- Having the courage to take calculated risks
- Ability and preparedness to handle many tasks simultaneously
- Ability to learn and acquire the necessary skills for the tasks at hand
- Ability to deal with tough issues and find the solutions
- Being realistic and not expecting easy solutions
- Ability to cope with set-backs, challenges and failures
- Ability to develop partnerships, and able networking
- Ability to negotiate, strategise and prioritise
- Being flexible and able to handle crises
- Have good communication skills.

In short, to achieve his / her objectives, the entrepreneur must be innovative, creative and goal-oriented. The entrepreneur must be ready to initiate direct action and be motivated to seek and adopt more effective means of doing things. Recently, more comprehensive and holistic conceptualisations of entrepreneurship have emerged wherein entrepreneurship is seen as a specific mindset resulting in different forms of entrepreneurial initiatives such as social entrepreneurship and knowledge entrepreneurship.

Social entrepreneurship focusses on doing social good. The social entrepreneur aims to achieve large scale benefits through entrepreneurship for a specific group or to society at large. Generally, the social entrepreneur works for the benefit of the underserved, neglected, disadvantaged groups or individuals who do not have the financial resources to achieve the benefit by themselves. Social entrepreneurs are 'social catalysts', visionaries who create basic social changes and sustainable improvements. Such actions may have the potential to stimulate global improvements in their specifically selected areas, be it education, health care, economic development, the environment, the arts, or any other social field. The success of social entrepreneurship is ascertained not so much by the profits made but more by the social benefits and impact.

ACTIVITY 13

Form groups of 6-8 children and organise a discussion in the groups about issues concerning unemployment. The discussion and presentation should focus on the following:

- Do you know anyone who is unemployed?
- How is that person's standard of living and state of mind affected by the fact that he/she is unemployed?
- Does he/she want to work?
- Is unemployment a problem in our country?
- What do you think are the main causes of unemployment in India?
- What does the government (locally and nationally) do about the problem?
- What other suggestions can you make to resolve this problem?

KEY TERMS

Work, meaningful work, careers, livelihood, rest and recreation, standard of living, social responsibility, ethics, volunteerism, traditional occupations, age and gender, child labour, attitudes and approaches to work, life skills, work and dignity, quality of work life, job satisfaction, creativity and innovation, work environment, occupational health, entrepreneurship.

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UNIT II

NUTRITION, FOOD SCIENCE AND TECHNOLOGY

Our life is centred around food. Food is more than a biological necessity. It contributes to our cultural identity, is a part of social and religious practices. Food also enables us to realise our creativity, is a symbol of hospitality, status and power, among many other things. Our food choices have far reaching effects. Food nourishes the body, promotes growth, enables it to function and builds resistance to infection. If we eat nutritious and wholesome food, our bodies can function optimally. Thus knowledge about food and nutrition is essential.

Food and Nutrition / Food Science and Nutrition is a broad domain consisting of several sciences that are distinct yet interrelated. As you know, nutrition influences our health, well being and quality of life. Are you aware that nutrition plays a significant role even before birth and that it affects the health of an individual throughout life? Have you ever thought of yourself as a biological being, that your body is made up of carefully arranged atoms, molecules, cells, tissues and organs? Every cell is regularly and continually replaced, some after a few days, some after months and some after years, although your external appearance may be relatively unchanged. For all these internal and external processes, nutrients are required and food is the source of these nutrients.

However, many people do not have the correct knowledge; some do not get adequate food, some overeat, others have wrong food choices because of various reasons, thus leading to malnutrition. In India, the proportion of undernourished persons has been high, but in recent years, prevalence of overnutrition is gradually increasing and many people are now suffering from health problems such as obesity, heart disease, hypertension, diabetes. Infectious diseases still continue to take their toll. Nutrition is the cornerstone for promotion of health as well as prevention and management of numerous disease conditions. Trained dietitians/medical nutrition therapists are required to give advice about diet and nutrition to the individual as well as the community. Trained public health nutritionists are required to tackle public nutrition and health problems at regional, national and international levels, for planning-implementing-monitoring-evaluating various strategies and programmes.

India is a major producer of fruits and vegetables, milk, etc., but almost 1/5th to 1/3rd of the produce is wasted. This calls for concerted action to prevent spoilage, preserve, process and convert foods into a variety of forms. Cost of production in India is less than in many other countries and foreign direct investment is high. Therefore, food processing industry has been termed as the 'sunrise sector' of the Indian economy. Simultaneously socio-economic and socio-cultural changes/transitions in the country have tremendously increased the demand for ready to eat and processed foods. Besides this, the increasing prevalence of disease has necessitated

development of foods for managing disease conditions. This has increased the demand for trained personnel who can undertake development, manufacture and marketing of various processed foods.

Increasing number of persons travel outside the home daily for education, work, tourism. Also those who live in institutions of various kinds such as old age homes, hospitals, orphanages, school and college hostels, prisons, ashrams need to be fed daily. Nutritious, wholesome and safe food needs to be prepared and catered. This requires expertise which can be achieved through appropriate training. With increasing tourism, interest in ethnic foods and cuisinology, there is demand for qualified persons.

However, availability of foods with varying shelf life is not enough. Safety of the foods is crucial. 'Safety culture' of any organisation is important, be it food processing/manufacturing/catering industry. Indian government therefore has introduced several legislations and standards of food safety from time to time. Ensuring that all consumers have access to safe, good quality food, will require persons trained in food quality and safety.

The five areas dealt in this Unit will acquaint you with basic concepts in each of these areas, give you insights about the professions and the knowledge and skills you need to acquire for each of these.



CLINICAL NUTRITION AND DIETETICS

LEARNING OBJECTIVES

After completing this chapter, the learner will be able to:

- understand and describe the significance and scope of clinical nutrition and dietetics.
 - describe the role and function of a dietitian/clinical nutritionist/medical nutrition therapist.
 - explain the knowledge and skills required for a career in clinical nutrition and dietetics.
-

INTRODUCTION

Nutrition is the science of food, nutrients and other substances as well as their digestion, absorption and utilisation by the body. Nutrition is also concerned with the social, psychological and economic aspects of food and eating. It is well known that optimum nutrition is important for providing immunity and protection from infection, and to promote recovery from a variety of illnesses as well as managing chronic diseases. When nutrient intakes are inadequate, the body has difficulty in maintaining immune defences, healing wounds, utilising medications, supporting organ functions. Such persons may fall victims to additional complications. Nutrition is also important in disease states. In some diseases, nutrition plays a major role in management and treatment, and for some it

complements the medical treatment. Nutritional status and support, prior to and after illness, play an important role in prognosis, recovery and even duration of hospitalisation. Also, illness and disease can result in nutrient imbalances even in a person who previously had good nutritional status. Thus health and nutrition are intimately interlinked. Poor nutrition not only leads to health problems but can also make existing problems worse. The specialised area of nutrition which deals with nutrition during illness is '*Clinical Nutrition*'. In recent times, this field is called Medical Nutrition Therapy.

SIGNIFICANCE

Nutritional care has gained importance worldwide, more so in recent times. Health problems/illness/disease and their treatment can affect nutritional status in a variety of ways: by impairing a person's ability to eat and/or swallow, by interfering with digestion, absorption and metabolism as well as excretion. Even if one function is initially affected, in some individuals, if the health problem intensifies, other body functions may be affected. Clinical nutrition focusses on the nutritional management of patients with established disease.

It must be borne in mind that function of any organ/tissue/system of the body can be affected due to disease, which can lead to minor and acute to major and sometimes, chronic or long lasting problems. In all these conditions, it is important to ensure that the person is adequately nourished and the person who delivers this service is a trained dietitian/medical nutrition therapist/clinical nutritionist. The professional clinical nutritionist/dietitian uses a systematic and logical approach to the nutrition care process, focussing on each person/patient's unique needs and addresses them in an individualistic and holistic manner. The patient is the primary focus of the nutritional care process.

The 20th and 21st centuries have witnessed tremendous advances in the field of medicine and pharmacology, enabling us to control many communicable and infectious diseases. However, newer diseases such as HIV/AIDS have emerged. Prevalence of non-communicable diseases such as obesity, heart disease, hypertension and diabetes is not only increasing, but these are occurring at a much younger age. In fact, India is likely to be the diabetes 'capital' of the world. Further, older persons require special attention. Thus, the proportion of population which requires nutritional care, support and diet counseling is increasing. The clinical nutritionist/medical nutrition therapist plays an important role in prevention of diseases and promotion of good health, besides recommending therapeutic diets for management of various diseases.

New scientific knowledge is being generated about physiological and metabolic disturbances in chronic and acute diseases; newer methods of

nutritional assessment are being developed and adopted, newer techniques and supplements for nourishing the patient are being used. With advances in the food and pharmaceutical industry basic research in nutrition has shed light on the role of various nutrients and other substances such as nutraceuticals, phytochemicals / bioactive substances resulting in the growth of the discipline of clinical nutrition. Researchers and scientists continue to discover the role of individual nutrients ranging from a role in gene expression, metabolic regulation and in the prevention and treatment of disease. For example, antioxidants like beta-carotene, selenium, vitamin E and vitamin C, particularly from food, appear to have a protective role.

According to the FSSAI, foods for special dietary uses or functional foods or nutraceuticals or health supplements means foods which are specially processed or formulated to satisfy particular dietary requirements which exist because of a particular physical or physiological condition or specific diseases and disorders and which are presented as such, wherein the composition of these foodstuffs must differ significantly from the composition of ordinary foods of comparable nature, if such ordinary foods exist, and may contain one or more of the following ingredients, namely:

- (i) plants or botanicals or their parts in the form of powder, concentrate or extract in water, ethyl alcohol or hydro alcoholic extract, single or in combination;
- (ii) minerals or vitamins or proteins or metals or their compounds or amino acids (in amounts not exceeding the Recommended Daily Allowance for Indians) or enzymes (within permissible limits);
- (iii) substances from animal origin;
- (iv) a dietary substance for use by human beings to supplement the diet by increasing the total dietary intakes.

Medical foods are those products that are specially manufactured for persons with specific needs. Such foods are regulated and can be used only with a doctor's prescription for the specific dietary management of a disease or condition.

Phytochemicals/Bioactive compounds are non-nutrient constituents present in foods that have physiological or biological activity and influence health.

BASIC CONCEPTS

The dietitian/ medical nutrition therapist's role is to provide advice and translate technical information into dietary guidelines. They provide advice

to patients and if necessary, give prescriptions to healthy individuals at different stages of the life cycle, from the womb to the tomb (i.e., pregnancy, infancy and childhood up to old age) in order to help them maintain good nutritional status and remain healthy. Besides this, nutrition and diet therapy are used to improve the overall health of patients with a wide range of conditions. Examples of these conditions are diarrhea, vomiting, food allergies, anemia, fever, typhoid, tuberculosis, ulcers, hyperacidity and heart burn, epilepsy, gastrointestinal problems, AIDS, hypertension, cancer, osteoporosis, obesity, burns, metabolic disorders, including diabetes, and kidney, liver, and pancreatic disorders. Patients who are to undergo surgery also need pre and post operative nutritional intervention/support. *Clinical Nutrition and Dietetics*, therefore, is concerned with nutritional requirements of patients suffering from different diseases and prescribing the right type of diet for them. The objectives of **diet therapy** are:

- (i) promotion of recovery formulation of the diet to meet the needs of the patient taking into consideration her or his food habits.
- (ii) modification of the existing diets to ameliorate the disease condition and to keep it under control;
- (iii) correction of nutritional deficiencies; if any
- (iv) prevention of short-term and long-term complications in case of chronic diseases;
- (v) education and counselling of the patient regarding the need to adhere to the prescribed diet.

A dietitian also needs to look at the effect of illness on food acceptance and utilisation. Some of the factors that are considered include (a) nutritional stress (b) psychological stress (c) effect of illness on food acceptance and (d) acceptability of modified therapeutic diets.

Thus, *Nutritional care* during illness is an organised group of activities and consists of :

- Assessing nutritional status
- Diagnosis of nutritional problems
- Planning and prioritising nutrition intervention(s) to meet nutritional needs
- Monitoring and evaluating nutritional care outcomes and making changes if necessary.

The nutritional care process is applied to individuals or groups in any setting from healthy persons who are clients of fitness/wellness centres/programmes, pregnant women, elderly persons, persons being treated for illness in private physicians' clinics to hospitalised patients, regardless of whether they are in municipal, government, charitable or private hospitals.

A study of clinical nutrition and dietetics enables the professional to:

- Plan diets appropriately to meet the nutritional requirements at various stages of the life cycle.
- Modify diets in various disease conditions, keeping in mind the physical state, occupation, cultural, ethnic and socio-economic background, the treatment regimen and the individual's likes and dislikes.
- Plan diets for athletes/sports persons, for individuals in special situations such as nutrition in space, persons working in submarines, defence personnel, industrial workers, etc.
- Promote health and well-being of patients admitted to hospital or in outpatient clinics as well as in institutional settings.
- Manage food services in a variety of institutional settings such as old age homes, schools, orphanages etc.
- Help patients with chronic diseases such as diabetes and heart disease in management, to prevent complications and improve quality of life.
- Promote better health in the community and better efficacy of services in health care institutions/ establishments in terms of better patient care management, holistic care, and contribute to better survival and recovery.

Nutritional assessment is required to obtain information on the patient's nutritional status and nutrient needs. It involves:

- Obtaining detailed information on health, diet, personal and medication histories
- Anthropometric measurements
- Relating the information on laboratory and physical measurements with the above and the physician's diagnosis
- Interpreting all of the above to identify potential nutritional deficiencies and risk of future deficiencies.

It must be borne in mind that physicians are ultimately responsible for ensuring that all the patient's medical needs are met. Based on the doctors' diagnosis of the disease condition and the nutritional assessment done, the dietitian prescribes the diet, ensures provision of food in the hospital according to the diet restrictions and provides dietary counseling to the patient. For the implementation of the diet prescription, the physician relies on the dietitian/medical nutrition therapist. Today, the field of clinical nutrition has evolved into a practice that is increasingly incorporated into mainstream medical treatment and the dietitian forms an integral part of the medical team.

The dietitian has the primary responsibility for ensuring that the patient receives appropriate diet and optimal nutritional care, after assessing the nutritional status of the patients, analysing nutrient needs (nutritional requirements change in different illness/disease states) and developing the nutrition care plan by administering suitable regimens to patients who are hospitalised or counseling those in the outpatient department (OPD).

Both normal and therapeutic diets are planned to maintain or restore good nutrition in the individual. This is done by the medical nutrition therapist/dietitian taking into account the food pattern and frequency of intake of different types of food, diagnosis of disease and prescription given by the doctor, the health status and physical condition including ability to eat, chew, swallow, digest and absorb the food eaten, feeling of hunger, physical activity and life style, dietary and other supplements consumed, cultural/ethnic practices and religious beliefs.

Let us get acquainted with some basic terms used by clinical nutritionists and dietitians.

Types of Diets : Any nutritional care plan involves providing for adequate intake of all nutrients vis-à-vis the requirements based on age, sex, physiological state, occupation and health status.

- A *standard, normal or regular diet* is one that includes all groups of foods and meets the needs of healthy individuals. However, in the hospitals a regular diet would be low in fried fatty foods, sweets, spices and condiments.
- *Modified diets* are those that are adjusted to meet the medical needs of a patient, which may involve one or more of the following: (1) change in consistency and/or texture (e.g., fluid and soft diets), (2) an increase or decrease in the energy intake, (3) include greater or lesser amounts of one or more nutrients e.g., increase in protein intake in case of surgery, lower protein intake in case of kidney failure, high or low in fibre, lower fat intake, restriction in sodium intake, restriction in fluid intake, restricted intake of certain foods as these may be rich in a non-nutritive dietary constituent e.g., spinach, because spinach is rich in oxalates, and (4) change in the number of meals, or modification in intervals of feeding or special plan for patients when route of feeding is altered.

Changes in Consistency: Depending on the condition, patients may be advised liquid, soft or regular diet (i) *Liquid diets* are primarily fluid in consistency at room temperature. Also known as full fluid diets, these include foods which are free from fibre and are nutritionally adequate. The advantage is that the nutrients are easily absorbed if the gastrointestinal tract is functioning normally. Such a diet is advised for persons who are

unable to chew or swallow normally. For example, coconut water, fruit juice, soup, milk, buttermilk, milk shakes, etc. A variation of this is also clear liquid diet, which is even more thin in consistency, e.g., clear soups or juices (without pulp), very light tea, etc. Clear liquid diet is prescribed just after surgery. However, the limitation is that it is not easy to meet the nutritional requirements of the person completely. (ii) *Soft diets* provide semi but solid foods that are lightly seasoned, do not contain much fibrous or gas forming foods. Such diets are easy to chew and digest. Examples of foods included in soft diets are *khichdi*, sago *kheer*, etc. Foods included should minimise the risk of indigestion, abdominal distention, nausea, cramping or any other gastrointestinal problems.

There are certain modifications we make even for normal adults in the older age group. This is called *mechanical soft diet* which includes soft, mashed and pureed foods for the elderly with problems in chewing. A soft diet, on the other hand, is a therapeutic modification. It is soft in consistency and includes only simple, easily digestible food with no harsh fibre, high fat or spicy foods. Such diets are given when rest to the digestive system is recommended.

Feeding Routes: The best and most preferred way / route for feeding the patient is orally or by mouth. However, there are patients who may not be able to chew or swallow e.g., if the person is unconscious or if there is a problem with the esophagus. For such individuals there are two options (a) tube feeding which is introduced through the nose into the stomach or (b) intravenous feeding. In tube feeding, nutritionally complete feeds are delivered through a tube. These are preferred over intravenous feeding which is introduced through the nose into the stomach as long as the gastrointestinal tract is functional and the person is able to digest and absorb whatever is fed. Intravenous feeding means that the patient is nourished with special solutions which are given through a drip in a vein.

Prevention of Chronic Diseases: Besides being important for persons with disease, diet and good nutrition (as well as a healthy lifestyle) can control and delay the age of onset of chronic diseases. The foods we consume today, especially processed foods, contain many additives, are high in fat and/or sugar, often are prepared from highly refined foods and are therefore low in fibre and many other important constituents which confer health benefits. This is why we need help in making appropriate choices.

Can you identify the types of changes that have occurred in the diets of urban Indians over the past decade? It is seen that fat consumption has increased, refined sugar consumption has increased. There is a reduced intake of fibre as well as several vitamins and minerals. In non-vegetarian populations, consumption of animal protein has also increased.

What are the consequences of these dietary changes? Broadly speaking, such changes have been associated with increased incidence of chronic diseases such as obesity, cancer of the colon, diabetes, cardiovascular disease and hypertension. For example, the increase in sugar and fat consumption, along with the decrease in fibre consumption and less physical activity, play a role in causing of obesity and diabetes. It has also been found that high consumption of highly salted convenience foods, processed foods with high sodium content, decreased intake of potassium-rich fruits, vegetables, grains and legumes, possibly low calcium intakes, less physical activity as well as stress are associated with increased risk of hypertension (high blood pressure).

Clinical nutritionists can play a very important role in preventing development of such problems by providing appropriate diet counselling and guidance. They can also be appointed for guidance to various groups such as schools and colleges, etc.

EXERCISE

1

Scientists have found connection between diet and disease. For example in a clinical study of 20,000 men, consuming fish once a week was linked to a 52 per cent reduction in the risk of sudden death from heart attack. Fish is high in omega-3 fatty acids, which are essential components of cells and can protect the heart from abnormal heart rhythm.

In another clinical study of more than 42,000 women, those who ate lots of fruits, vegetables, whole grains, low-fat dairy products, and only lean meats lived longer. High intake of fruits, vegetables, and legumes was associated with a lower risk of developing heart disease.

What can you conclude about (a) role of the diet in disease causation? (b) role of the diet in disease prevention?

PREPARING FOR A CAREER

The professional clinical nutritionist or dietitian must have:

- Knowledge of physiological changes in disease conditions, changes in RDAs/nutrient requirements in illness and types of dietary modifications required, traditional and ethnic cuisines.
- Skills in assessing nutritional status of patients using clinical and biochemical criteria, diet planning customised to requirements of individual patients and specific disease conditions, recommending and administering diets to patients, communication for diet counselling, adapting to cultural milieu, food taboos and overcoming fads/myths.

It is absolutely essential to have knowledge (both theoretical and practical) of the subject areas of nutrition, food science, food composition, clinical nutrition and dietetics or the more recently used terminologies such as medical nutrition therapy or medical nutrition management. For this, the clinical nutritionist and dietitian needs to have thorough knowledge and understanding of the basic biological and physical sciences including chemistry, biology, physiology, biochemistry. Since food safety, especially in institutional settings, is critical, s/he must have knowledge of microbiology and food microbiology and safety, food quality and assurance, food laws and regulations, physics to be able to effectively use and ensure maintenance of the various equipments used in food preparation, storage and service. Knowledge of food service management including quantity food production is essential. Basic knowledge and understanding of bookkeeping and accounts, record-keeping, management, especially personnel management, are important. One of the most important aspects of the job profile of a dietitian is counselling patients. Disease changes the body and mind. It can have a major impact on both the physiological and mental/emotional condition of the body. Counselling is an art and a science. A dietitian requires knowledge of psychology, sociology, education and counselling in order to become a good diet counsellor.

Clinical nutritionists would need to have additional knowledge of epidemiology and the patterns of prevalence and incidence of nutritional disorders and diseases, skills in surveying patient populations, laboratory research using biochemical parameters, skill in conducting experimental research with patients to find out the usefulness of various diets, drugs and nutritional supplements.

PREPARING FOR A CAREER

In order to choose any of the career options offered by Clinical Nutrition and Dietetics, you need to have passed 10+2 level followed by completion of a B.Sc. degree in Home Science or B.Sc. with a specialisation in Nutrition / Food Technology. In case you want to be a dietitian you must at least complete a Postgraduate Diploma in Dietetics with an internship to qualify to be a registered dietitian. Those who have a B.Sc. degree in Home Science, Life Sciences, Biochemistry, Microbiology or Biotechnology can enter this area at the Postgraduate Diploma level. M.Sc. in Food Science and Nutrition or Dietetics helps one to specialise in this field and are preferred in many places of employment. A dietitian, after finishing her/his university education, can go further and qualify to obtain the credential of a “Registered Dietitian”. Many countries have regulatory laws regarding this. If you choose a career focussing on teaching and research, a number of options open up in universities, colleges and research institutions. In order to qualify for teaching posts it is now essential to successfully clear

the National or State Eligibility Tests conducted by University Grants Commission (UGC). It is advisable to complete your Ph.D. too in case you want to pursue a career in academics or research.

SCOPE

Clinical Nutrition and Dietetics offers rich scope and potential for a satisfying career as a dietitian, diet counsellor, teacher, researcher or corporate consultant. The primary career and wellness possibilities in this field include becoming a dietitian, diet counsellor or clinical nutritionist engaged in research and/or teaching. Besides this, clinical nutritionists also have career opportunities in the food industry, research and development (R&D) and production of medical foods, nutraceuticals, tube feeds, various types of nutritional support formulations or functional foods.

If you have a keen interest in improving the way in which we use food to control, prevent and treat disease conditions, clinical nutrition and dietetics is the field you should choose. Clinical Nutrition and Dietetics has a promising future. While most of us have an idea of the role of dietitians and diet counsellors, we may not be aware that there is expanding scope for research into the physiological and psychosocial changes brought about by disease conditions. The relevance of nutritional considerations in preventing, treating and curing different types of disease conditions is being increasingly accepted. Research has led to the development of drugs and nutritional supplements, rehabilitation of patients in community settings; development of dietary guidelines and nutrition education.

Further, clinical nutritionist can have a role in delineation of public policy, in designing and implementing preventive and promotive nutrition programmes to tackle nutritional deficiency disorders. You could expect jobs as a dietitian in hospitals/ clinics, wellness centre, gyms, slimming clinics with consultants, teacher / faculty in a university or college, researcher in medical research establishments and nutrition research laboratories, consultant in companies developing therapeutic foods and supplements, food service manager/ provider in hospitals etc. You can also work as a freelancer, diet consultant or dietitian running your own enterprise.

CAREER AVENUES:

- Dietitians with consultants/physicians, in health clubs or gymnasiums
- Dietitians in hospitals including speciality departments; a key member to provide nutrition support in the healthcare team

- Freelance Dietitian.
- Dietitians in catering services for hospitals, schools, industrial canteens, etc.
- Entrepreneurs who develop and supply speciality foods for specific health purposes
- Teaching and Academics
- Research including Clinical Research
- Nutrition Marketing
- Technical Writing.

KEY TERMS

Dietetics, clinical nutrition, dietary modification, therapeutic diets, dietitian, nutrition counselling.

REVIEW QUESTIONS

1. What is the significance of the study of clinical nutrition and dietetics?
2. What are the types of dietary modifications that a medical nutrition therapist may make?
3. Why do we need dietary changes to prevent chronic diseases? How are they linked with lifestyle?
4. What are the roles performed by a dietitian? How does the dietitian form a team in patient care with other health care professionals?
5. How can we prepare for a career in clinical nutrition and dietetics?
6. How does illness/disease affect nutritional status of a person?

PRACTICAL 1

Theme: Modification of a normal diet to soft diet for elderly person.

- Tasks:**
1. Interviewing and recording of one day's diet / food intake for an adult,
 2. Assessing the diet to determine whether it is nutritionally balanced,

3. Modifying the diet to suit the needs of an elderly person who needs a soft diet,
4. Assessing the modified diet to determine whether it is nutritionally balanced, and
5. Interacting with an elderly person to determine whether the modified diet is acceptable.

Purpose: This practical will enable students to understand the basic concepts of diet modification for a specific purpose and the importance of providing a well-balanced, nutritious diet, keeping in mind the age, sex and health status of the individual. It will also give them an opportunity to interview a person and recording diet intake.

Conducting the Practical

Note to the Teacher: The first part of the practical (Tasks 1 and 2) is to be done with an adult person within 60 years of age and the modification of the diet (Tasks 3, 4 and 5) has to be done for an elderly person, as given on page 68.

This practical can be done individually or in pairs.

1. Each individual student/pair should interview an adult man or woman who is below 60 years of age, in your family or neighbourhood.
2. One day's diet, i.e. food intake including all liquids and beverages, are to be recorded in the format given herein. An example is given for your reference.
3. The diet should then be assessed to determine whether it is nutritionally well-balanced, using the guide given.
4. This diet should then be modified to a soft diet (easy to chew and swallow) for the following situations: **(Note to teacher: One case of the following to be assigned to each student/pair)**
 - a) An elderly man/woman who has no teeth - age > 70 years
 - b) An elderly man/woman who has no teeth and has difficulty in swallowing
 - c) An elderly man/woman who has dentures (age about 60-65 years)
 - d) An elderly man/woman who does not have molar teeth.
5. Assess the modified diet to determine whether it is nutritionally balanced.
6. Interact with an elderly person in your family or neighbourhood.

7. The diet plan is to be shared with them, and their comments and suggestions should be recorded
8. Teacher to facilitate a class discussion about the exercise.

Record of 24-hour dietary intake

Time of Day	Meal	Menu Item	Ingredients	Amount consumed (in household measures)	Remarks*
Early morning	Bed tea				
Morning	Breakfast				
Mid morning					
Afternoon	Lunch				
Evening					
Night	Dinner				
At bed time					

* Note any additional ingredients added e.g., sugar to milk, ghee on chapati or rice, supplement in milk, sugar or jaggery or honey eaten with bread or chapati, etc.

Example for recording the food intake

Time of Day	Meal	Menu Item	Ingredients	Amount consumed (household measures)	Remarks*
Example 6.30 am	Bed tea	Tea	Milk Sugar	1 mug	2 tsps sugar added
7.30 am	Breakfast	Bread with omelette Milk	Bread Butter Egg -1 Oil Onion Coriander Milk	2 slices 1 tsp 1 omelette 1 mug	Sugar added 1 tsp Supplement added (e.g.) 1 tablespoon

Guide for assessing diet quality and whether the diet is nutritionally balanced

Food group	No. of servings consumed	No. of servings recommended	Difference between recommended and consumed
Cereals and Millets		Approx 10	
Pulses and Legumes		2-3	
Green leafy vegetables		½ to 1 katori cooked	
Other vegetables		2 katoris ^b cooked	
Roots and tubers		½ to 1 katori	
Fruits		2-3 servings ^A	
Milk/milk products e.g., curd		1 glass / 1 katori	
Visible fats and oils including butter, ghee etc.		6 tsps*	
Sugar and jaggery		4 tsps*	

Note: * The maximum desirable intake

(a) At least one of the fruits should be a source of vitamin C

(b) including salads



PUBLIC NUTRITION AND HEALTH

LEARNING OBJECTIVES

After completing this chapter the learner will be able to:

- understand the significance and scope of public nutrition.
- have knowledge about the nutritional problems of public health significance.
- be acquainted with the government programmes that are in operation to tackle important nutritional problems.
- describe the role and functions of a public health nutritionist.
- explain the knowledge and skills required for a career in public health nutrition.

INTRODUCTION

In Class XI you studied the basic concepts of nutrition and health, physical fitness and wellness. You must be aware of the importance of good nutrition as the foundation and cornerstone of health. So what is significant about the introduction of the word ‘public’ in this context? Let us find out. You are already familiar with the definition of health given by the World Health Organisation. The concept of public health refers to the collective action taken by society to protect and promote the health of the whole populations.

In Class XI, you were introduced to the terms undernutrition and overnutrition. The mission in public health nutrition is to prevent both undernutrition and overnutrition and to maintain optimal nutritional status of the population.

SIGNIFICANCE

Why do we need to focus on this specific aspect in the field of nutrition? Malnutrition is the underlying cause of at least 50 per cent deaths of children under five years of age. The statistics for nutrition-related problems in our country reveal an alarming situation:

- Almost one-fifth of the infants born in India are low birth weight babies i.e., they weigh less than 2500g or 2.5kg. Low birth weight may have adverse effects throughout their growing years and may have adverse implications even in adult life. Low birth weight may even lead to child mortality.
- There is widespread prevalence of growth retardation among pre-schoolers (from socio-economically disadvantaged families) and almost half the children suffer from mild and moderate under nutrition.
- A large proportion of children (and adults) suffers from micronutrient deficiencies in varying degrees of severity also known as hidden hunger. The micronutrients of most concern are iron, zinc, vitamin A, vitamin D, iodine, folic acid and B12.

If these problems are not controlled in time, they will not only affect physical growth which may lead to smaller body stature in adulthood, but may also affect mental and cognitive development. All of these, in turn, can have negative impact on productivity and quality of life. The costs of malnutrition are very high. Experts have estimated that productivity losses are more than 10 per cent of lifetime earnings for individuals and 2-3 percent of gross domestic product for the nation. This clearly indicates that if we tackle malnutrition, we can help India to develop, grow economically and become a powerful nation.

India mostly faces the problem of under nutrition; however, the problem of over nutrition is also on the rise. Gradually, over the years, large numbers of persons have altered their dietary patterns and lifestyles. With respect to lifestyle, people have become more sedentary, relying on faster means of transportation, walking less and doing less amount of physical activity. In large cities, even children do not play enough outdoor games. Simultaneously dietary patterns have become less 'healthful'. Food choices have become less 'healthy' because processed foods, fast foods,

snacks, western type foods, e.g., burgers, pizzas, biscuits, chocolates, cakes and pastries, soft drinks, even Indian *mithais*, *samosas*, etc. (that are high in energy, sugar, fat, salt and low in other nutrients and fibre) are increasingly becoming part of the daily diet. At the same time, intake of whole grains, pulses, vegetables and fruits has reduced. All these lead to undesirable/inappropriate weight gain, overweight and obesity and ultimately lead to diseases such as hypertension, heart disease, diabetes, cancer, arthritis, among others. These diseases are non-communicable and take their toll not only on the physical health but also on quality of life, adding to the financial burden.

Thus India is said to face ‘the double burden of malnutrition’ i.e., coexistence of both undernutrition and overnutrition. Further, although communicable diseases like smallpox have been controlled, newer ones like HIV/AIDS and old ones like tuberculosis, hepatitis, malaria, are increasing in prevalence. The ultimate consequences of these communicable diseases are far worse for those who are not optimally nourished i.e., those who are undernourished and those who have lower immunity due to obesity, diabetes, HIV/AIDS, etc. This poses challenges for doctors, nutritionists and the government in terms of treatment, control and prevention.

There is a tremendous need for a trained cadre of public health professionals including public health nutritionists, to address and solve these problems. Let us first acquaint ourselves with what is public health nutrition.

BASIC CONCEPTS

What is Public Health Nutrition?

Public health nutrition is the field of study that is concerned with promotion of good health through prevention of nutrition-related illnesses / problems in the population, and the government policies and programmes that are aimed at solving these problems. Public health nutritionists / professionals use large scale, organised and multidisciplinary approaches to solve the problems that affect the population i.e., large number of people for whom group action is necessary. Therefore, this field is multidisciplinary in nature and is built on the foundations of biological and social sciences. It differs from other fields of nutrition e.g. clinical nutrition and dietetics, because the professionals are required to address problems of the community / public specially the vulnerable groups. Public Nutrition is a special body of knowledge derived from the nutritional, biological, behavioural, social

and managerial sciences. It can also be described as the art and science of promoting health and preventing diseases, prolonging life, through the organised efforts/action of society.

A **community** is a specific group of people who share common characteristics, e.g. a common language, exposed to similar conditions, common lifestyle or the same health problem.

Any professional in the field of public nutrition has to promote good nutrition and /or to prevent nutritional problems, for which it is important to identify the problem and its magnitude, understand how and why these problems occur and then plan strategies and actions to implement them and evaluate their impact.

In any society, nutritional problems are not just linked to food but to a variety of interacting/interrelated factors at various levels which have been summarised in Figure 3.1. While poverty is often the underlying cause, the situation becomes worse when a substantial proportion of families do not have access to basic amenities. Rural households have less access to toilets. Poor sanitation results in loss of work days and further economic loss. Further, considerable proportion of the population does not have safe drinking water. Working days are lost each year due to water borne diseases.

As shown in Figure 3.1, the factors related to nutritional problems range from economic factors (availability of financial resources), agricultural policy (production, price of various food stuffs), health care facilities/services, their availability and access to the government policies, political will and socio-cultural factors.

Nutritional Problems in India: It is important to have knowledge about the nutritional problems in our country.

Let us discuss these in brief:

- a) *Protein- Energy Malnutrition(PEM)* : Can be found in every society, even in developed and industrialised countries, although the numbers are fewer in the latter as compared to developing countries. It is caused by inadequate food intake vis-à-vis the requirements, i.e., insufficient intake of the macronutrients (energy and protein). Children are at greatest risk although PEM can occur in adults especially the elderly, as well as in some diseases e.g. T.B., AIDS, etc. It is assessed by evaluating the anthropometric measurements (weight, height, head-chest circumference, etc.).

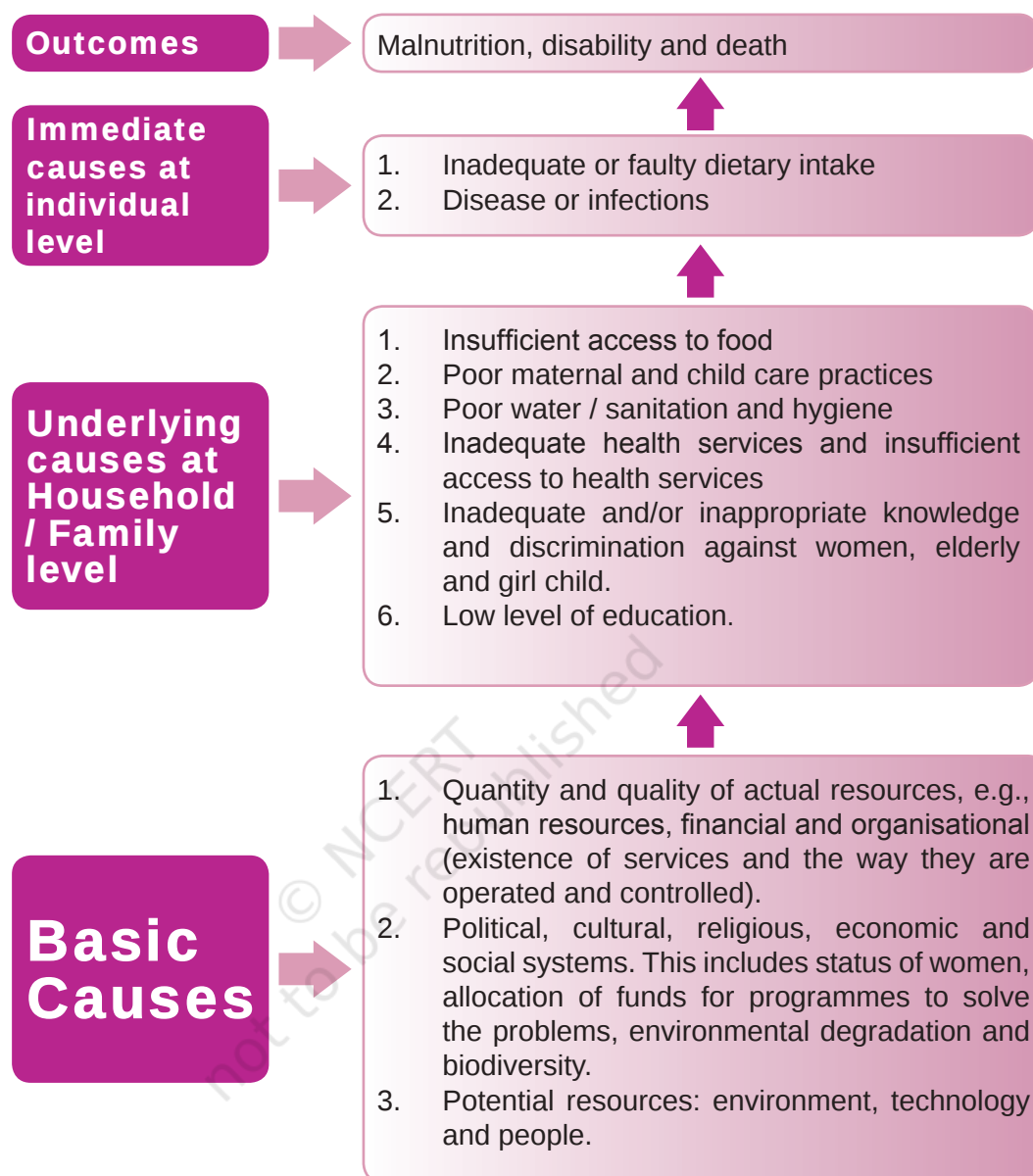


Fig. 3.1: Factors Related to Undernutrition

A person is said to be underweight when his/her body weight is less than adequate for his/her age. Stunting (short stature) is said to be present when the height is less than adequate for age. When weight is not adequate relative to height, it is termed 'wasting'.

Severe undernutrition due to deficiency of food and energy is termed as 'marasmus' and that caused by protein deficiency is termed 'kwashiorkor'.

- b) *Micronutrient deficiencies*: If the diet is deficient in energy and protein content it is also likely to contain inadequate amounts of other nutrients especially micronutrients viz. minerals and vitamins. The term "hidden hunger" is used to refer to micronutrient deficiency. The deficiencies of iron, vitamin A, iodine, zinc are of major public health concern. In addition, there is growing concern about deficiency of vitamin B12, folic acid, calcium, vitamin D and riboflavin. Some micronutrient deficiencies of public health concern are described below:



(a)

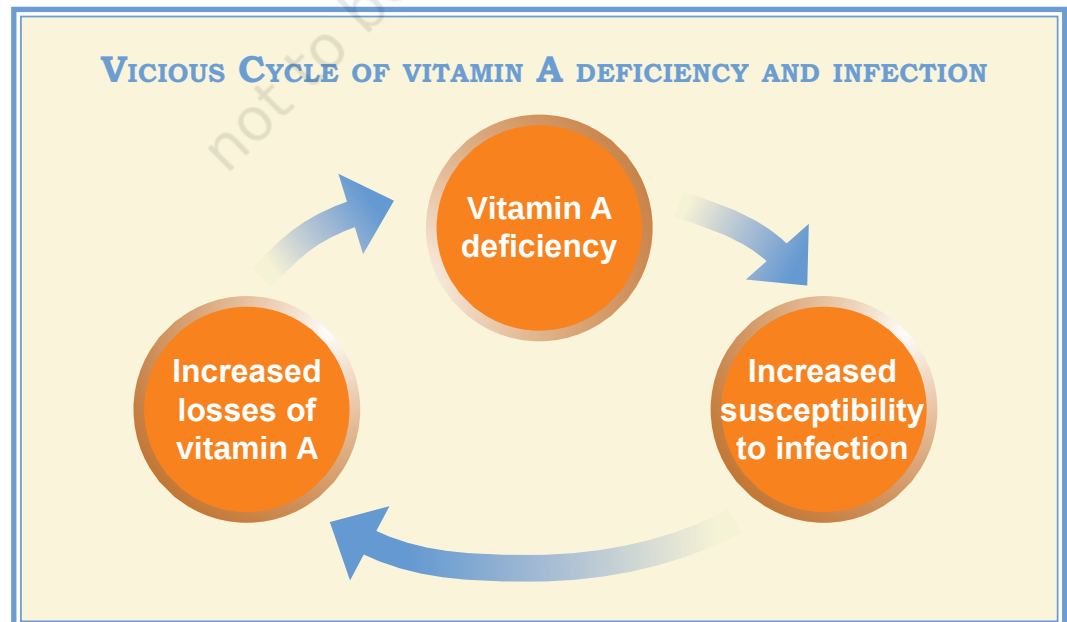


(b)

Victims of (a) Protein Energy Malnutrition and (b) Micronutrient Deficiency

Source: SIGHT and LIFE, Basel, Switzerland

- (i) *Iron-deficiency anemia (IDA)*: It is the most common nutritional disorder in the world and is prevalent in both developed and developing countries. The vulnerable groups are women in child-bearing age, adolescent girls, pregnant women and school age children. IDA occurs when hemoglobin production is considerably reduced and it results in low levels of hemoglobin in blood. Symptoms depend on the rate of fall in hemoglobin. Since hemoglobin is required for carrying oxygen in the body, any physical exertion leads to shortness of breath (breathlessness on slight exertion) and the person complains of fatigue and may feel lethargic. Manifestations of IDA include general pallor, paleness of conjunctiva of eyes, tongue and nail beds and soft palate. In children, cognitive functions (attention span, memory, concentration) are adversely affected.
- (ii) *Vitamin A deficiency (VAD)*: Vitamin A is necessary for maintenance of healthy epithelium, normal vision, growth and immunity. Deficiency of vitamin A results in night blindness which progresses to complete blindness if corrective measures are not taken. Also, there is less resistance to infection and growth may be adversely affected. There is a vicious cycle between vitamin A deficiency and infection. Vitamin A deficiency is the most common cause of childhood blindness.



- (iii) *Iodine deficiency disorders (IDD)*: Iodine is required for normal mental and physical growth and development. IDD is an ecological phenomenon, largely due to deficiency of iodine in the soil. Some of the states in India where IDD is common are—Jammu and Kashmir to Arunachal Pradesh in the Himalayan belt, Andhra Pradesh, Karnataka, Kerala, Maharashtra and Madhya Pradesh. The term '*Iodine Deficiency Disorders*' refers to a spectrum of disabling conditions that affect the health of humans, from fetal life through adulthood due to inadequate dietary intake of iodine. Deficiency of iodine results in insufficient amount of thyroid hormone which is synthesised by the thyroid gland.

Enlarged thyroid known as 'goitre' is the most common manifestation of iodine deficiency in adults. In children it manifests as cretinism. Iodine deficiency in adults during pregnancy has several adverse effects specially resulting in mental retardation and congenital abnormalities of the fetus. Unfortunately this effect is irreversible. IDD is estimated to affect about 13 per cent of the world's population and about 30 per cent are at risk.

Strategies/intervention to tackle Nutritional Problems

As our former Prime Minister Dr. Manmohan Singh stated in one of his speeches "*The problem of malnutrition is a matter of national shame I appeal to the nation to resolve and work hard to eradicate malnutrition in 5 years*". There is a need to adopt a multi-disciplinary approach to solve nutritional problems. Government is making considerable efforts to solve the problems. POSHAN Abhiyaan or the PM's Overarching Scheme for Holistic Nutrition was launched in Jhunjhunu, Rajasthan in March 2018. It targets stunting, under-nutrition, anaemia (among young children, women and adolescent girls) and low birth rate. It will monitor and review the implementation of all such schemes. Its large component involves gradual scaling-up of interventions to all districts in the country by 2022. The Ministry of Women and Child Development (MWCD) is implementing POSHAN Abhiyaan in 315 districts in the first year, 235 districts in the second year and remaining districts will be covered in the third year. Through robust multi-ministerial convergence mechanism and other components POSHAN ABHIYAN would strive to create the synergy. Some direct short term interventions are: (a) Integrated Child Development Services (ICDS) to cover all vulnerable children in the age group of 0-6 years and all pregnant and lactating mothers, (b) fortification of essential foods (salt fortified with iodine), (c) production and popularisation of low cost nutritious foods from indigenous and locally available raw material by involving women in this

activity and (d) control of micronutrient deficiencies among vulnerable groups, namely deficiencies of iron, vitamin A, folic acid and iodine among children, pregnant women and nursing mothers by supplementing these nutrients, distributing free tablets, etc.

Indirect policy instruments include long term strategies for achieving national goals through indirect institutional or structural changes such as: (a) ensuring food security i.e., improving availability of food, (b) improvement in dietary patterns by ensuring availability of nutritionally rich foods and (c) poverty alleviation for rural and urban poor through employment generation schemes and public distribution system, implementing land reforms, improving health and family welfare, prevention of food adulteration, involvement of media, basic nutrition and knowledge, monitoring of nutrition programmes, improvement of status of women, education and literacy and community participation.

There are various strategies that can be used to combat public nutrition problems. They are broadly classified as:

- a) Diet or food-based strategies
- b) Nutrient-based approach or medicinal approach

Diet or food-based strategies: They are preventive and comprehensive strategies that use food as a tool to overcome nutritional deficiencies. They can play an important role in preventing micronutrient deficiencies by increasing the availability and consumption of micronutrient-rich foods. One of the important advantages of this strategy is that it is sustainable and will have long-term benefits. Other benefits are that they are cost-effective, can be adapted to different cultural and dietary traditions and very importantly they do not carry risk of overdose or toxicity which may happen in case of nutrient-based / medicinal approach. Some important food-based approaches include dietary diversification and modification, horticulture interventions e.g., home gardening, nutrition and health education, food fortification.

Nutrient-based or medicinal approach : In this approach nutrient supplements are given to vulnerable groups i.e., those who are at risk of deficiency and those who have deficiency. It is a short term strategy particularly used for vitamin A, iron and folic acid in India. Supplementation programmes are often expensive and there may be problems of coverage. Key target groups are different for various nutrients.

Table 3.1 compares the two approaches. It must be remembered that the long-term goal should be to shift away from supplementation towards food-based approaches.



Providing nutritious food

Source: SIGHT and LIFE, Basel, Switzerland



Child with Vitamin A deficiency

Source: SIGHT and LIFE, Basel, Switzerland



Yellow, green & orange fruits and vegetables are good source of Vitamin A



Vitamin A deficiency picture of eye



Iron and Folic acid drops



Weighing of a Child



Counselling with mothers

Table 3.1: Different Interventions for Tackling Malnutrition

Intervention	Appropriate for	Advantages	Challenges/ Disadvantages
Medicinal or Nutrient Based			
Nutrient Supplementation	Therapeutic treatment Prevention programmes for specific nutrient and specific target groups	Timely Sustainability	More costly than other measures Narrow scope of coverage
Food Based or Diet Based Strategies			
Fortification (fortifying food with nutrients)	Prevention (Universal /For all)	Highly cost-effective Wide coverage Sustainable	Requires research Participation of food industry Does not lead to awareness in the population about the importance of nutrition and nutrients Does not lead to long-term dietary/ behavioral changes
Dietary Diversification	Prevention (Universal /For all)	Highly cost-effective Wide coverage Sustainable Provides many micronutrients simultaneously Improves food security	Requires changes in eating behaviour Requires economic development to be feasible Requires change in agricultural policies

Adapted from: *Public Nutrition (Course Material)* published by Indira Gandhi Open University

Let us enlist the Nutrition programmes operating in our country:

1. ICDS: It is an outreach programme for early childhood care and development, covering pregnant and nursing mothers and infants and young children upto 6 years.

2. Nutrient Deficiency Control programmes, namely, National Prophylaxis Programme for Prevention of Blindness due to Vitamin A deficiency, National Nutritional Anemia Prophylaxis programme, National Iodine Deficiency Disorder Control Programme,
3. Food Supplementation Programmes like the Mid-Day Meal Programme,
4. Food Security Programmes, namely, Public Distribution System, Antodaya Anna Yojana, Annapurna Scheme, National Food for Work Programme, and
5. Self-employment and wage employment schemes.

Self-employment and wage employment are social safety net programmes.

Health Care: Health is a fundamental human right. It is the responsibility of the government to provide adequate health care to the citizens. Health care is not just medical care but it includes a multitude of services that should help to promote, maintain, monitor or restore health. In India, health care is provided at three levels : primary, secondary and tertiary. Primary level is the first level of contact of the individual, family or community with the health system. In our country, these services are provided through a network of primary health centres (PHCs).

More complex health problems are resolved at the second level through district hospitals and community health centres. Community health centres function as the first referral level. Tertiary is the third and the highest level of health care. It deals with the more complex health problems that cannot be dealt with at the first two levels. Institutions at tertiary level are medical college hospitals, regional hospitals, specialised hospitals and All-India Institutes of Medical Sciences.

SCOPE

Role of Public Nutritionist: Nutrition is an important determinant of health. The changing health scenario globally has increased the challenges for public nutritionists. The public nutritionist (also called community nutritionist), who is well trained and equipped in key areas, is eminently suited to participate in all the strategies of health promotion and prevention. The key areas include nutritional science, nutritional needs throughout the life cycle, nutritional assessment, nutritional care, food science, educational methods, mass media and communication and programme management. A community nutritionist can work in the following areas/situations.

- (a) As a part of outreach programmes undertaken by hospitals for prevention and promotion and education.
- (b) As a part of the national Integrated Child Development Services, at different levels based on qualifications and expertise.
- (c) At the government level as consultants, advisors, or in policy making committees.
- (d) In all developmental programmes of government, voluntary organisations, NGOs and international organisations like UNICEF, USAID, GAIN, Nutrition International, TATA Trust, IFPRI and others are numerous other national and regional organisations.
- (e) They can be involved with organisations who undertake large scale feeding programmes for various target groups such as young children, school children, adolescents, pregnant and lactating mothers, elderly, challenged individuals.
- (f) Nutritionists or school health counsellors in school health programmes.
- (g) They can be involved with corporate CSR programmes dealing with food and nutrition security to vulnerable groups.

Besides this, there are avenues in teaching, research, entrepreneurship with agencies involved in developing communication materials and educational packages for those who have adequate and appropriate training.

ACTIVITY 1

School to organise visit to Anganwadis (ICDS centres). Students can interact with supervisor (if possible) or sevika, observe the activities (if possible, be present when the food is distributed) and prepare a power point presentation about the same.

ACTIVITY 2

School to organise an interactive session with medical officer /health in charge of PSM dept / PHC / Municipal Corporation about the problems of undernutrition and its the possible causes.

ACTIVITY 3

School to organise an exhibition on nutritional problems in India, their causes, vulnerable groups and simple preventive measures.

ACTIVITY 4

Log on to the websites of WHO, UNICEF, Poshan Abhiyaan, Ministry of Health and Family Welfare and Ministry of Women and Child Development to learn more about their programmes and activities.

CAREER AVENUES

- Community nutritionist in PSM departments of hospitals
- Nutrition programmes of the government. e.g., ICDS, Food and Nutrition Board
- In voluntary organisations (regional, national and international) as nutritionists
- As consultants
- Nutritionists or counselors for schools, industries, etc.
- Teaching and academics
- Research

KEY TERMS

Nutritional status, undernutrition, malnutrition, public health, public nutrition, nutrition programmes, community health.

REVIEW QUESTIONS

1. Explain the terms: Stunting, low birthweight baby, IDD, wasting, 'double burden of malnutrition', marasmus, kwashiorkor, community.
2. Discuss the various strategies that can be adopted to combat public nutrition problems.
3. What is public health nutrition?
4. What are the common nutritional problems facing India?
5. What are the consequences of IDA and IDD?
6. What is the scope of public health nutrition? List some of the career choices in this area.

PRACTICAL 1

Theme: Development and Preparation of Supplementary Foods for Nutrition Programmes

- Tasks:**
1. Obtaining the prices of commonly consumed, locally available foods
 2. Planning of low-cost recipes for supplementary food for preschoolers attending an *Anganwadi*.
 3. Preparation of selected recipes
 4. Evaluation of the prepared recipes

Purpose : This practical will provide insights to the students into planning, costing and preparation of supplementary foods for preschoolers within a given budget.

Conducting the Practical

1. Divide students into 4 groups
2. The groups should plan the recipes to provide selected nutrients as follows:

Each group should plan 2 recipes and calculate the cost using the price list. Plan should be made for 5 servings.

Group A: To plan recipes that will be good sources of energy and protein

Group B: To plan recipes that will be good sources of iron

Group C: To plan recipes that will be good sources of vitamin A or Beta carotene

Group D: To plan recipes that will be good sources of calcium

Note: Students are not required to calculate the nutritive values/nutrient content of the recipes

A cost limit is to be given by the teacher (Not more than ₹ 5 per serving).

3. Each group should identify the possible locally available food sources for the specific nutrient for which they have to plan the recipes.
4. The planned recipes should be checked by the teacher and one suitable recipe should be selected for preparation.
5. The product should be prepared in class and evaluated for (a) serving size, (b) cost (c) suitability for preschoolers (d) appearance (e) taste (f) acceptability by children.
6. Observations and comments should be recorded and suggestions given for improvement.



CHAPTER

4

CATERING AND FOOD SERVICE MANAGEMENT

LEARNING OBJECTIVES

After completing this chapter the learner will be able to:

- know the different types of catering and food services, and the types of services used in the industry.
 - be acquainted with the scope of the field of catering and food service management, and the career avenues available.
 - understand the need for developing knowledge and different skills to become food service professionals.
-

INTRODUCTION

Whenever a person leaves his/her home for more than a few hours, s/he has to seek hospitality elsewhere. Often it may be a snack, a drink or even a meal because his/her home is too far away to go to and eat. In a long work day, even if a person takes a packed lunch, s/he may want to drink some beverage—it may be tea, coffee, juice or an aerated drink. Thus, we require services that will supply food whenever and wherever necessary. These services are performed by the catering industry. The catering industry provides, to varying extents, a substitute for food that one would have got at home.

In ancient times in India, *dharmashalas* catered to travellers who went on pilgrimages. Even today, such *dharmashalas* are in operation, offering

an economical place to stay and have meals. Besides this, at religious places, it is traditional to give *prasad* or *langar* to the devotees. Similarly, during the month of Ramzan, food is provided to all people when they break their fast. All of these foods are prepared in very large amounts, by persons who have the expertise to do so.

With changes in the socio-economic scenario, food service and catering has evolved into an industry that is expanding, as there is much greater demand for food outside home which is tasty, hygienic, healthy and aesthetically served. In some situations, there is a demand for food with longer shelf life. Scientific and technological advancement has helped those involved in mass production of food to streamline their activities, be more effective, improve the safety and quality and yet make it less tiring. Use of computers has also contributed tremendously- not just for maintenance of records, accounting systems, but also for on-line ordering of food, information about equipment manufactured in different parts of the world and recipes for various preparations.

SIGNIFICANCE

Today with increasing migration, urbanisation, globalisation, international travel, tourism, exposure to various cuisines and advertisements, as well as increasing interest of local people to try out new foods, there is demand for variety of cuisines and typical ethnic foods. Fig. 4.1 shows the factors influencing development of food services.

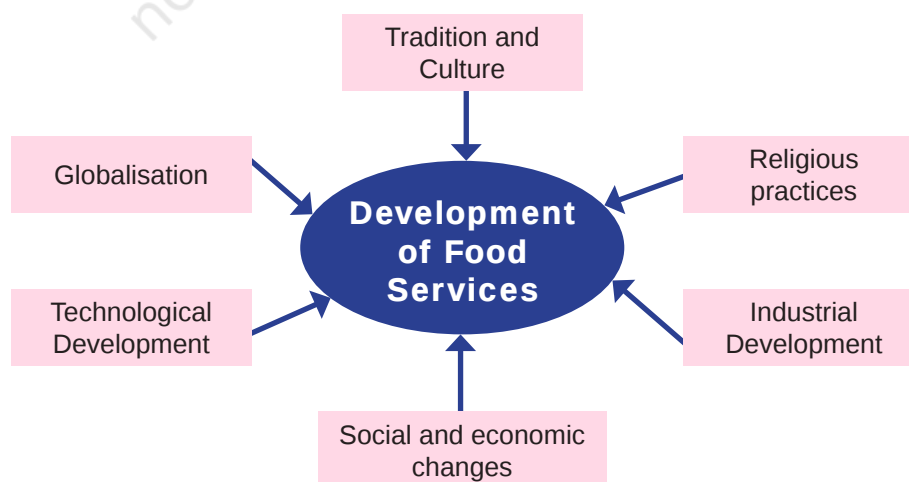


Fig. 4.1: Factors Influencing Development of Food Services

Knowledge of a variety of cultures and their ways of cooking is important. Thus people involved in this business need to have broad culinary experience. Media, particularly television, has stimulated interest in cooking and the different food patterns of various cultures. Have you seen most TV channels deal with cookery and cuisines? In India alone, we have a very wide variety of regional cuisines from Kashmir in the North to Tamil Nadu and Kerala in the South, to the North Eastern states, Orissa and West Bengal in the East to Gujarat and Maharashtra in the West. This has made “Cuisinology” an area of interest and provided new professional avenues. Similarly, across the world, there are numerous cuisines e.g. British, Welsh, Irish, Scottish, French, Italian, Spanish, German, Austrian, Russian, Eastern European, Swiss, Scandinavian, Mediterranean and Middle Eastern, American, Mexican, Caribbean, African. In Asia and S.Asia, besides Indian, we have Pakistani, Bangladeshi, Thai, Chinese, Korean, Japanese, Indonesian, among others. In each of these cuisines, the ingredients used and the methods of preparation vary considerably.

Food needs to be provided to people of all ages, in all walks of life, at any and all times in a 24-hour period. One thing is common to all – the need for food to be cooked and served well. Besides, providing food at the workplace, institutions providing care for different target groups, such as hospitals, old age homes, orphanages, hostels, have developed. Other institutions where food is routinely provided are school, college, office, prisons, feeding programmes undertaken by the Government or voluntary sector to improve the health and nutrition of specific groups.

Services that cater/provide food service are also known as Catering Services.

Catering can also be regarded as a service that provides a pleasant change from home cooked food. People like to enjoy a meals/snacks/beverages that have been prepared and served in different and pleasant surroundings. More families are now eating out at weekends or go out to eat sometimes in the evening for pleasure. Also, many families increasingly travel away from home on holidays. They need to eat while traveling and throughout the holiday period in restaurants/hotels etc, making national and international tourism and catering a ‘growing’ industry.

There are individuals or groups who prepare food and send them to persons at their places of work or to their homes. This is known as home – based food service. Such entrepreneurial catering activities are many,

for example take home meals or delivery of home made meals. Many of these enterprises are undertaken by women who use their interests and skills at cooking. The demand for food to be catered is brought about by the large number of families where both husband and wife are working, and in some places where people live alone, have limited facilities for cooking or are unable to cook for themselves. There are also mobile units that serve food. Provision of food/snacks and beverages is needed at community activities such as fairs, exhibitions, rallies, flower/fruit/vegetable shows where visitors would like to avail of some refreshments. Similarly, refreshments, lunches may be served at meetings. All of these reflect the scope of opportunities in the catering industry and the potential for different careers in this field of food service management.

Before we discuss the various careers, let us acquaint ourselves with important concepts and aspects that are relevant to this industry.

BASIC CONCEPTS

Food service industry is large and encompasses those places, institutions and companies that are responsible for any food or beverage preparation outside the home. These vary from expensive hotels and restaurants to less expensive outlets such as fast food outlets, street food vendors, food services in canteens /cafeterias in schools, colleges, universities, industries, offices as well as flight and railway catering. Food service industry may also be referred to as ‘catering’ industry.

Food service management is the art of providing food and beverages aesthetically and scientifically to a large number of people, in a satisfactory and cost effective way. It requires a professional approach along with special skills, knowledge and vigilance at each and every stage in food service operation.

Food service is the practice or business of making, transporting and serving prepared foods. The purpose of food service is to supply palatable food prepared under acceptable standards of sanitation, aesthetically served at specified cost.

Food service manager is the one who assumes responsibility for the management and administration of a food service unit /department / organisation.

Menu is a means of communication by which the caterer / food service unit, whatever type it may be, informs the customer / consumer what food items are being offered.

Let us acquaint ourselves with the types of food service establishments.

Types of Catering Services

Catering services can be broadly categorised as shown in Figure 4.2, based on their social and economic significance. This categorisation is based on whether the aim of the catering is primarily profit making or otherwise.

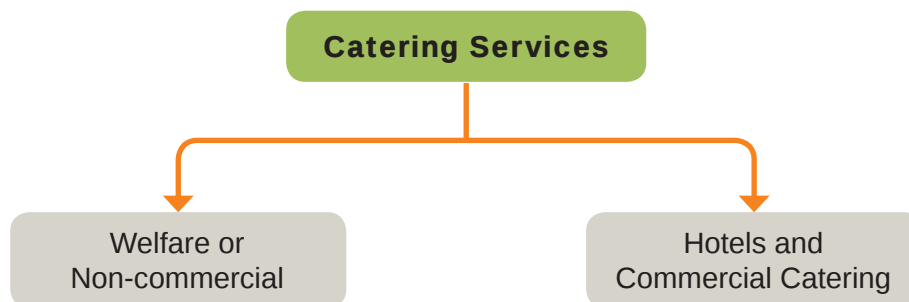


Fig. 4.2: Types of Catering Services

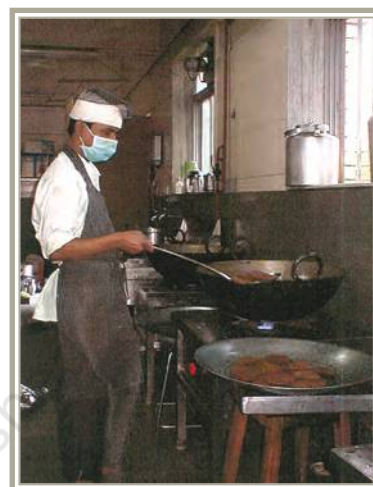
Welfare / Non-Commercial Services: The major purpose of these services is philanthropy and social welfare. Persons / organisations who undertake these services, aim to ensure that people are well and properly fed, and if any profit is made through their business, it is of secondary importance. Examples of such catering services are feeding people at workplaces, the armed forces, in schools, in supplementary feeding programmes implemented by the government or for sick people who are in hospitals. Industrial catering is one form of welfare catering. Many industries provide food to their employees as part of their welfare activities. It is believed that work output is related to the welfare of the employees. Well-fed workers produce more and better work. Workers receive free food or food at a price much lower than its actual cost (subsidised), with the rest of the cost being borne by the company. In industrial, institutional and welfare outlets the objective is mainly to provide a necessary service. Caterers / managers of these services may be given limited budgets within which they are required to successfully manage the operations. In such situations, the caterer may not be in competition with other caterers for business since the functions 'belong' to the employing organisation. Also, in such establishments, the service is not available to the public, but only to the members of the institution / organisation for which the service is operated.

Commercial Services: Such services and establishments are open to the public and sell food and beverages primarily to make a profit. However, these services are valuable because they provide for the needs of their

consumers as well as are source of employment. Also, these services have tremendous economic significance to the country. Hotels and catering services support the tourist, travel and holiday industries. It is a major earner of foreign exchange since this industry brings money into the country in exchange for its services. Through the tourism industry, hoteliers and caterers indirectly contribute to advancing understanding between different countries.



Quantity Food Preparation by a Women's group



Food Production in a School Canteen

Examples of establishments that undertake food service and sales are given in Table 4.1.

Table 4.1: Types of Food Service Establishments

Welfare Catering	Commercial Catering
Mid-day meals in schools	Small to large hotels, restaurants, dhabas, cafes
School food services	Expensive luxury restaurants, Spas, Speciality restaurants
Industrial canteens(when employers provide free or subsidised food to employees)	Guest houses, Holiday camps
Institutions – school and college hostels, working women's hostels	Fast food joints/ Take away(quick service restaurants)

Special needs e.g. hospitals,	Snack bars
Old age homes, nursing homes	Coffee shops, speciality food services e.g. ice cream parlours, pizza
Orphanages	Food services in cinema halls, theatres, malls
Prisons	Wine Bars
<i>Dharmashalas</i>	Travel services on sea, land, air (Transport catering) e.g. flight kitchens, buffet cars in trains
<i>Langar, Prasad</i> including meals offered to devotees at temples	Catering for seminars, workshops, conferences, parties and weddings
Feeding programs undertaken by religious orders e.g., Ramkrishna Mission, ISKCON	Catering for industries and institutions on contract basis (in-house food service)
Creches	Chain catering organisations
Supplementary feeding programmes of government/municipality e.g., Midday meal programme, ICDS' supplementary feeding	Clubs/gymkhanas
	Mobile Catering

ACTIVITY 1

In your area/ region find out the various catering services available and identify whether they are commercial or welfare.

Styles and standards of functions in catering by the commercial sector vary widely:

- At internationally famous 7/5-star establishments, meal service is elegant, luxurious, usually a large variety of cuisines are available, and the banquet manager has at disposal all the resources of skill and equipment needed. It requires highly skilled professionals and is costly to provide and maintain. Prices at such establishments are always extremely high.
- Less expensive establishments such as 3 / 4 star hotels, restaurants, etc. have a pleasant and cheerful ambience, the food and service is of a high standard where costs and prices are less than at the very top level.
- Small restaurants using minimum number of equipment and food is relatively cheaper. Menus may not vary much.

Having acquainted ourselves with types of food service establishments, it is also important to have some knowledge about types of food service systems and delivery of foods.

Types of Food Service Systems

There are basically four types of food service systems—conventional, commissary, ready prepared and assembly/serve.

1. *Conventional food service system:* Food is prepared in a kitchen on the premises where the food is to be served. Following food preparation/ production, food is held hot or cold and served as soon as possible. The food may be distributed for service directly to an adjacent service area e.g., in cafeterias, restaurants, dining halls of hostels. Alternatively it may be carried on trays e.g., served to patients in hospitals. This system is more adaptable to individual preferences. Seasonal ingredients can be used and there is greater flexibility in menu planning. Also, distribution costs are minimal.
2. *Commissary food service system:* In this system, food is prepared centrally at one place, but it is distributed to several remote areas for final preparation and service, since the food production centre and the service areas are located in separate facilities. Hence, a food distributor is necessary to ensure that the food is supplied to the various outlets. For example, there are chains of outlets like Coffee Day, Barista, etc. where the basic food items like ice cream, milk, cookies etc. are supplied from a centralised kitchen. When a customer orders a milk shake, it is prepared as per the flavours and other ingredients, toppings, etc. are added as per the customer's

wishes. The advantages are that all ingredients can be purchased in bulk (saves money), there is no need for separate equipment and personnel to cook the food in each unit. Uniformity of quality of products for all units can be assured and it is cost effective.

3. *Ready-prepared food service systems:* Food items are prepared well in advance before the time of service and kept frozen until they are to be used. In large cities, many such food items are available e.g. frozen parathas, samosas, cutlets, French fries etc. Mafco and Godrej are examples of industries that have developed and are marketing such products. One important aspect in this kind of operation is the need for special equipment for freezing the food and separate freezers for storing the food in frozen condition. Extreme care must be taken in food handling procedures to prevent contamination and spoilage.
4. *Assembly-service system:* In this, fully prepared foods are purchased from manufacturers and only finishing processes such as seasoning, thawing, reheating is done at the place of service. These operations require minimal cooking at the point of service e.g., sale of 'gol gappas/pani puri or bhel puri'. The manufacturing process is separated from the distribution process/service. One of the limitations is that the number of items prepared may not be large.

Irrespective of the type of establishment and food service system, the overall goal is to ensure that the food supplied is of good quality. For this, the food service manager/caterer should have (i) knowledge of menu planning, food selection, preparation and service, equipment required, (ii) have organisational and managerial skills, successful personnel direction, (iii) ensure that sanitation and hygiene are optimal, (iv) have an adequate system of cost control, (v) wisely utilise space for the physical layout of the unit, (v) ensure appropriate waste management practices and procedures are used, and (vi) the entire operation should be environment-friendly to the extent possible.

In all food service establishments, planning of a menu (also called bill of fare) is a vital component since all activities in a food service unit/organisation are centred on the menu.

Menu Planning

The success of the organisation is determined by the menu and how well the various items are prepared and served. Menu compiling is one of the most important jobs in catering. All activities in the food service unit are influenced by the menu. Some of the points to be considered while

planning a menu are: season and availability of ingredients, price range, time of day— determines which meal and the type of items to be included e.g., breakfast, snacks, lunch, dinner, special function, types of beverages to be served, sensory appeal and attractiveness of food, no repetition of colours and flavours, nutritional considerations and food habits of inmates, consumers, e.g., in industries, schools, colleges, etc., menu pattern and sequence of courses, i.e., food items to be served (generally soup is served first in western meals).

Functions of a menu: The menu essentially performs two functions: (a) it informs the customer or consumer about what is available, and (b) the catering staff about what is to be prepared. A well planned menu reflects careful thought. It represents three points of view (a) the customer gets value for money in terms of the quantity of food served, variety and the palatability as well as the way the food is served, (b) the employees who have to translate the written menu into the actual food products, and (c) the management who get satisfaction in terms of profit, good reputation, satisfied customers who will come back to the establishment. In profit making establishments, the menu creates an image which also reflects the overall style of the restaurant. Attractive, well designed menus help to promote sales and can be a means of advertising. There are several kinds of menus which are very interesting and challenging, particularly for those who have keen interest in varied cuisines.

The advantage of menu planning is that it is labour-saving, time saving and cost-effective. Nowadays, menu planning is being increasingly computerised. Translating the written menu into production of high-quality food is the responsibility of the manager. Whatever the type of food service and establishment, running the establishment requires management skills.

Management in Food Service

Management is a process of using resources to achieve goals through various interacting elements. Essentially it involves taking decisions in order to achieve goals. Thus we can also define management as a process of decision-making and control over the action of human beings for the explicit purpose of attaining predetermined goals. This includes management of human and non-human or material resources. These resources in general are known as 6 M's – *money, material, man (human resource), machines, minutes (time) and markets.*

Management includes several functions—planning, organising, delegating, motivating, directing, reporting, budgeting and coordinating the entire process. Let us briefly discuss each of these:

Planning: This is a basic and crucial function. All other functions are dependent on planning. The objective of planning is to think in advance, determine clear objectives and policies, and select an appropriate course of action in order to accomplish the goals. Planning includes formulating a plan of action in accordance with the objectives and policies, delegating work to various staff members to ensure smooth functioning of the organisation. It is short term and long term, and also requires day-to-day planning of activities. Planning is the foundation based on which the participants (staff) at various hierarchical levels, are enabled to execute their work effectively. In planning we ask questions such as: *What to do? Where to do? When to do? Who will do it? How to do it?*

Organising: This involves identifying the tasks of the organisation and dividing it into positions, and the jobs and tasks each position demands, grouping together workers of one particular skill and ability together in order to use human resource and other resources effectively and efficiently. Organising serves as a link between various other functions of management.

Staffing: This function involves employing and training human resource. It is important to hire persons with the required knowledge and skills so that the desired results are obtained in accordance with the goals and objectives.

Directing and Delegation: This requires the skills and ability for making decisions quickly, on an on-going basis. Delegation involves distribution of workloads to appropriately qualified individuals at various levels within the organisation.

Directing also involves looking after the interests of the staff and not just the interests of the organisation.

Controlling: This aspect is important to ensure that the performance is in accordance with the plans. This also includes cost control, which is very essential for financial operations. All items of income and expenses are to be monitored and controlled. Good cost control necessitates use of a system of records that serve as a tool to operate within predetermined financial limits.

Coordinating: This function helps in interlinking and interconnecting various types of activities for smooth running of the organisation and achieving its objectives.

Reporting: This requires, keeping the different authorities of a department, e.g., managers, executives, informed about the various tasks through reports, papers and records. This needs to be done to ensure smooth functioning.

Budgeting: This is important for all organisations including food service and catering units. All activities are planned and undertaken keeping in mind the finance available. Budgeting involves planning for allocation and use of financial resources and accounting.

PREPARING FOR A CAREER

Persons involved in this industry also need to have knowledge about planning and establishing the physical facility for food preparation and service. Some of the personal skills essential to succeed in the food service industry are:

- An interest in food and regular update of trends in national and international cuisines.
- Ability to have a good focus on quality, production, sanitation and food cost controls.
- Ability to establish, maintain and enforce consistently high performance standards.
- Good communication and interaction skills (Ability to communicate effectively, both verbally and in writing, to an array of diverse internal and external clients).
- Good organising abilities with an eye for detail.
- Pleasant, cheerful and energetic personality.
- Good command over English, other preferred languages especially foreign languages.
- Ability to be on your feet for long hours.

SCOPE

Within this one vast industry, there are different kinds of jobs requiring different kinds of skills. Some who have the appropriate training may work in a palatial ‘7’-star establishment, with a luxurious atmosphere and come into contact with famous and important people of many nationalities. It is an international industry, providing opportunities for trained persons to be able to work abroad for some or throughout their careers. There is demand for well-trained experienced professionals who can participate in opening hotels and other catering establishments in different countries. Other opportunities to work in this field are in the catering units providing food to cruise ships, airlines and the railways. Large private hospitals

also have catering managers in their kitchens, cafeterias and hostels. Most departments in the catering industry are complicated specialisations requiring a great deal of work, dedication, practice and mastery. These are basic qualities that must be possessed by any young person who wants to embark on a career.

Careers in the Catering and Food Service Industry

In this industry, a person can work in various positions such as Food Service Supervisor, Cafeteria Manager, Catering Manager, Production Manager, Purchase Manager and Food Service Director /Asst Food Service Director. Placement can be obtained in independent restaurants, corporate restaurants, franchised restaurants, managed services in educational institutions, health care industry, e.g., hospitals, industrial canteens, catering services in travel related transport systems such as air (flight kitchens), trains, cruise lines (ship).

Persons who are interested in cooking, who have good culinary skills, with additional and specialised training can work as Executive Chef, Sous Chef, Chef Tournant, Station Chef. Besides this, there are vast opportunities to take up catering independently. One can set up independent restaurants, corporate restaurants, franchised restaurants.

Also, one can undertake managed services for education, healthcare, business and industry (catering meals at work places), catering in amusement parks, catering in national, state, and regional parks, catering for adventure/eco-tourism, catering for theme parties, product launches, banquets, official functions, etc., preparing and supplying special, nutritionally modified meals/health foods that are low in Calories, fat, and cholesterol, high in fiber and nutrition, breakfast foods that are healthier. Media, particularly television, has stimulated interest in cooking and the different food patterns of various cultures. In fact, the scope of the food service industry is unlimited.

ACTIVITY 2

School to arrange a visit to two different types of food services e.g., (i) a hospital or mid day meal or industrial canteen or hostel and (ii) a hotel or catering service that caters for marriages etc. Students to interact, observe and make a report about the operations, menu, organisation and management etc.

ACTIVITY 3

Large scale food production: Students to be divided into groups. Each group to be in charge of different functions – menu planning, procurement, purchase and storage, preparation, display, service and sale, accounts, waste disposal and sanitation. The class should decide on a theme, plan the menu, decide the number of servings (suggested number 25-30). Each group will undertake the tasks under the guidance of the teacher starting from bringing raw materials, making the menu items, costing them and deciding the sale price, advertising the menu and ensuring that the laboratory is clean and garbage is disposed of. After the activity profit / loss is to be calculated, teacher can guide discussion about mistakes made that need to be corrected.

CAREER AVENUES:

- In catering industry as Food Service Supervisor, Cafeteria Manager, Catering Manager, Production Manager, Purchase Manager and Food Service Director / Asst Food Service Director
- As chefs in hotels, speciality restaurants
- In charge of school, industrial and hospital canteens
- Catering in amusement parks, catering in national, state, and regional parks, catering for adventure / eco-tourism, catering for theme parties, product launches, banquets, official functions
- In media shows
- Own entrepreneurial ventures
- Specialists in Cuisinology
- Writing for magazines, newspapers, blogs and media shows
- Consultancy

KEY TERMS

Food service, catering management, catering industry, food service manager, menu planning

REVIEW QUESTIONS

1. List the various types of Food Service establishments.
2. What is a menu? What are its functions?
3. Explain the factors influencing development of Food Service.
4. Distinguish between welfare and commercial catering.
5. Describe the various functions involved in management of a food service institution.
6. Describe the career avenues in the area of food service management.

PRACTICAL 1

Theme: Planning a menu for 4 days for a school canteen or one week for a midday meal scheme

- Tasks:**
1. Identifying the type of foods that can be included in the menu for a school canteen or what is generally recommended for a midday meal scheme
 2. Identifying foods that are relatively low cost, locally available and nutritious
 3. Planning the menu

Purpose: This practical is intended to give the students some experience in planning a menu which will be varied and nutritious and liked by children. They will also learn differences between menu items that can be given as snacks and those that should be given in mid-day meal.

Conducting the Practical

Divide the students into four groups.

Groups A and B will be assigned planning of a menu for school canteen for 4 days and Groups C and D will be assigned planning of menu for midday meal scheme for seven days.

1. Each group should make an attempt to ensure that the menu is varied but not expensive.
2. A list of locally available cereals, pulses, fruits and vegetables should be made.
3. Each group should plan a menu, ensuring that different recipes/ foods are available on each day.

4. Teacher should guide students to plan recipes that will have vegetables, sprouted pulses, fruits and, to the extent possible, are nutritious and not deep fried.
5. Menu items should provide proteins, vitamins and minerals, and should not be rich in energy.
6. Each group should present their menus to the class.
7. If time permits, one day's menu can be prepared in the laboratory and evaluated.
8. Comments and suggestions for improvements should be recorded.

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CHAPTER

5

FOOD PROCESSING AND TECHNOLOGY

LEARNING OBJECTIVES

After completing this chapter the learner will be able to:

- understand what is food processing and technology, its history, development and present status
 - explain the significance and basic concepts of the subject
 - be aware of the skills required to be a professional food technologist
 - be aware of the career opportunities available and educational qualifications required for specific careers in the industry
 - know the scope for self employment as small, medium or large scale entrepreneurs.
-

INTRODUCTION

Food items are being processed for various reasons. Since times immemorial, grains have been dried after harvest to increase their shelf life. Initially, foods were processed primarily to improve digestibility, palatability and to ensure a continuous supply. In India pickles, *murabbas* and *papads* are examples of preserved products made from certain vegetables/ fruits/ grains. With passage of time, improved transportation, communication and increasing industrialisation, the needs of consumers have become

more diverse and there is now increasing demand for foods, 'fresh' and 'organic' foods, 'safer and healthier' foods and foods with adequate shelf life. Consumers expect better-quality foods with retention of nutrients, many a time having specific functional properties and taste/texture/consistency, while being shelf-stable and easy to package, store and transport. This has served as a stimulus to scientists to develop methods and techniques to process foods in a manner that the food products will meet the requirements and demands of the consumers. All of us eat readymade foods. These range from biscuits, bread, pickles/papads to foods such as ready-to-eat curries, meal items, snacks, etc. Such foods are manufactured using a variety of processes and technologies. For some, simple traditional methods are still used while newer processes and technologies are employed to produce processed foods in bulk.

Significance: India has progressed from an agro-deficit to an agro-surplus country creating need for storage and processing of agricultural and horticultural produce. Indian food industry has thus emerged as a major producer of processed foods and ranks fifth in terms of size, contributing nearly 6 per cent of GDP. Besides, changes in lifestyle, increasing mobility and globalisation have increased the demands for various types of products, making the research for newer technologies necessary. It is well known that simple diets based largely on staple foods such as cereals are often deficient in certain nutrients leading to their deficiency disorders. Therefore, *food fortification* is done by adding the nutrient that is lacking in the food stuffs or condiments to ensure that minimum dietary requirements are met. Some examples are iodised salt, folic acid added to flour, vitamin A and D added to milk and oils/fats. In fact, FSSAI has laid down standards for fortification of staple food like salt, wheat flour, milk and oats. Increasing prevalence of diseases like heart disease and diabetes and concern about wellness, has made it necessary for scientists to alter the nutrient content of foods, for example reducing the Calorie content of processed foods in several ways such as using artificial *sweeteners*. Likewise fat from ice creams is replaced by specially treated proteins which give ice cream the smooth texture associated with fat but the energy value is reduced. Also, consumer perceptions about food have changed. The demand for foods free of chemicals, pesticides and preservatives, yet having a longer shelf life and retaining their natural flavour and appearance, is rapidly increasing. All this has increased the importance of food processing and technology as a discipline and there is a huge demand for food technologists.

BASIC CONCEPTS

Food Science: It is a distinct field involving the application of basic sciences such as chemistry and physics, culinary arts, agronomics and microbiology. It is a broad discipline concerned with all the technical aspects of food, beginning with harvesting or slaughtering and ending with cooking and consumption. Food Scientists have to use the knowledge of biology, physical sciences and engineering to study the composition of foods, changes that occur at various stages from harvest through different processes and storage, causes of their spoilage and the principles underlying food processing. Food scientists deal with physico-chemical aspects of food, thus helping us to understand the nature and properties of food.

Food Processing: It is the set of methods and techniques used to transform raw ingredients into finished and semi-finished products. Food processing requires good quality raw materials from either plant and/or animal source to be converted into attractive, marketable and often long shelf-life food products.



Food Technology: Technology is the science and application of scientific, as well as socio-economic knowledge and legal rules for production. Food technology uses and exploits knowledge of Food Science and Food Engineering to produce varied foods. Study of Food Technology gives in-depth knowledge of science and technology, and develops skills for selection, storage, preservation, processing, packaging, distribution of safe, nutritious, wholesome, desirable as well as affordable, convenient foods. Another significant aspect of food technology is to promote sustainability to avoid waste and save and utilise all the food produced and ensure safe and sustainable processing practices.



Food manufacturing: It is the mass production of food products using principles of food technology to meet the diverse needs of the growing population. Food manufacturing is one of the largest manufacturing industries in the present times.

Development of Food Processing and Technology

Research in the field of Food Technology has been conducted for decades. In 1810, development of the canning process by Nicolas Appert was a decisive event. Canning had a major impact on food preservation techniques. Later Louis Pasteur's research, in 1864, on spoilage of wine and his description of how to avoid spoilage was an early attempt to put food technology on a scientific basis. Besides wine spoilage, Pasteur conducted research on production of alcohol, vinegar, wines, beer and souring of milk. He developed 'pasteurisation'- the process of treating milk to destroy disease producing organisms. Pasteurisation was a significant advance in ensuring microbiological safety of food.

Food Technology was initially used to serve military needs. In the 20th century, world wars, exploration of space and the rising demand for varied products from consumers contributed to the growth of Food Technology. Products such as instant soup mixes and ready-to-cook items including meals were developed, specially catering to needs of working women. Further, food industry was compelled to focus on nutritional concerns. Food preferences and choices changed and people started incorporating into their diet food items/preparations from different regions and countries. The desire to have seasonal foods all year round increased. Food technologists made efforts to provide both safer and fresher food using new techniques. In the 21st century, food technologists are challenged to produce foods suitable for health and other changing needs of consumers. Food technology has provided a vast variety of safe and convenient foods. In developing countries this rapidly expanding and developing field, has

been helpful in improving food security and has opened avenues for employment at all levels.

Importance of Food Processing and Preservation

It has already been mentioned that food processing is a branch of manufacturing wherein raw materials are transformed into intermediate foodstuffs or edible products through the application of scientific knowledge and technology. Various processes are used to convert bulky, perishable and sometimes inedible food materials into more useful, concentrated, shelf-stable and palatable foods or potable beverages. Changes in the products often reduce preparation time for the cook. Most of the time, processing of foods adds value to the resultant product by increasing storability, portability, palatability and convenience. Professionals in the food processing need to be knowledgeable about general characteristics of raw food materials, principles of food preservation, processing factors which influence quality, packaging, water and waste management, good manufacturing processes and sanitation procedures. Let us briefly examine the need, principles, methods and modernisation of food processing.

Foods are subject to physical, chemical and biological deterioration. Food deterioration is associated with spoilage, development of off-flavors, deterioration of textures, discoloration and loss of nutritional value in varying degrees, reducing aesthetic appeal and rendering it unfit/unsafe for consumption. A number of factors can lead to food deterioration or spoilage e.g. pests, infestation by insects, inappropriate temperatures used for processing and/or storage, excessive exposure to light and other radiations, oxygen, moisture. Food is also contaminated by micro organisms [bacteria, fungus and moulds) or chemicals such as pesticides. Food can also be spoiled due to degradation by naturally present enzymes (a specific class of protein molecules that act as biological catalysts to accelerate chemical reactions). In addition, physical and chemical changes in certain constituents of food from plant and animal sources occur soon after harvesting or slaughtering, altering the food quality.

Therefore food processing and preservation are required to preserve food in edible and safe form. Methods by which food is preserved from spoiling after harvesting or slaughtering date back to prehistoric times. The oldest methods were sun drying, controlled fermentation, salting/pickling, candying, roasting, smoking, baking and using spices as preservatives. These tried and tested techniques are still used although, with the advent of industrial revolution, new methods have been developed. Food processing incorporates and unifies the general characteristics of different classes of foods and principles of food science, chemistry, food microbiology,

nutrition, sensory analysis and statistics including good manufacturing practices as per regulations.

Classes of Foods Based on Perishability

Perishable foods are foods that spoil quickly within one or two days e.g., milk, curds, fish and meat.

Semi perishable foods can last for 1–2 weeks. Examples are fruits and vegetables. Root crops like onions and potatoes last for 2–4 weeks.

Non-perishable are those foods that generally last for one year e.g., grains like rice, wheat, pulses and dals, oilseeds.

Many food processing operations are designed to extend the shelf life of the food products. The concepts associated with food processing are reducing/eliminating microbial activity and other factors that influence food spoilage. The principle micro organisms that cause food spoilage are bacteria, fungi, yeasts and moulds. Just recollect that you studied in biology how they grow typically very rapidly under congenial conditions. Factors influencing microbial growth are nutrient availability, moisture, pH, oxygen levels and the presence or absence of inhibiting substances e.g. antibiotics. The activity of enzymes inherently present in foods also depends on pH and temperature. Oxidative enzymes in fresh fruits and vegetables continue to use oxygen to metabolise, reducing the shelf life of fruits and vegetables. So the basic concepts in food processing methods to prevent food spoilage are:

1. Application of heat,
2. Removal of water moisture,
3. Lowering of temperature during storage,
4. Reduction of pH,
5. Controlling the availability of oxygen.

Did You Know?

- *Bacteria prefer protein rich foods e.g. meat, fish, poultry, eggs, and dairy products. These are known as **High Risk Foods**.*
- *Bacteria grow at any temperature between 5–60° C. This temperature range is known as the **Danger Zone**.*

Processed foods can be classified on the basis of extent and type of processing as follows:

1. *Minimally processed foods*: These are processed as little as possible in order to retain the quality of fresh foods. Generally the processes used are cleaning, trimming, shelling, cutting, slicing and storage at low i.e., refrigeration temperatures.
2. *Preserved foods*: The methods of preservation used do not change the character of the product substantially e.g., frozen peas and frozen vegetables, dehydrated peas, dehydrated vegetables, canned fruits and vegetables.
3. *Manufactured foods*: In such products, the original characteristics of the raw products are lost and some basic methods of preservation are used, often using various ingredients such as salt, sugar, oil or even chemical preservatives. Examples are pickles, jams, marmalades, squashes, papads, wadis.
4. *Formulated foods*: These are products prepared by mixing and processing of individual ingredients to result in relatively shelf-stable food products such as bread, biscuits, ice cream, cakes, kulfi.
5. *Food derivatives*: In industry, components of foods may be obtained from the raw product through purification, e.g., sugar from sugarcane or oil from oil seeds. In some cases, the derivative or the component may be processed further, e.g., conversion of oil to vanaspati (the process is called hydrogenation).
6. *Functional foods*: These are foods that can have a beneficial effect on human health, e.g., probiotics.
7. *Medical foods*: These are used in dietary management of diseases, for example, low sodium salt, lactose-free milk for persons with lactose intolerance.

ACTIVITY 1

- In your region / community, list the foods that are preserved at home and identify the method and preservatives used for preservation.
- Identify the processed food made using artificial sweeteners that are available in your area.

Professionals who are involved in food processing and technology need to have a wide range of knowledge and skills. Table 5.1 shows categorisation of food production in three stages and lists the knowledge and skills required for each:

1. Food as a material
2. Food Product development
3. Recipe development

Table 5.1 Knowledge and Skills needed for Food Processing and Technology

Food as a material	Food Product Development	Recipe Development
- Seasonal availability of food stuffs - Nature and properties of food - Nutritional content and its analysis - Cost of food stuff - Influence of chemical pesticides, time, moisture, temperature and additives - Assessment of the quality of raw foods and ingredients for quality production of food - Food Hygiene and Food Safety - Knowledge of Information Technology for contemporary food production	- Knowledge of food preparation and cooking skills for large scale food production - Knowledge of product specifications, and testing it - Observing and measuring Quality Control as per specifications - Assessment by sensory methods [by testing and tasting produced foods] - Industrial practices and manufacturing systems and their control - Labelling and packaging of marketable product - Hazard Analysis and Critical Control point. {HACCP}	- Expertise in cooking - Knowledge of nature and properties of food - Uses of ingredients, measuring and weighing them accurately - Designing, analysing and adapting a basic recipe - Food handling skills - Food production following hygiene and safety norms - Handling tools and equipment accurately - Innovations in product design and preparation according to consumer perceptions - Use of Information Technology for contemporary production

PREPARING FOR A CAREER

Food industry is involved in processing/manufacture, research and development (modifying existing food products, developing new products, researching consumer markets and developing new technologies), ensuring food safety and monitoring food quality, improving quality control procedures, costing to ensure profitable production, and regulatory affairs. They may specialise in a particular branch of food technology such as beverages, dairy products, meat and poultry, sea food, fats and oils, stabilisers/preservatives/colours, food grains and additives. A professional in this area requires knowledge and skills about:

- Food science, food chemistry, microbiology, food processing, safety/quality assurance, good manufacturing practices and nutrition.
- Analysis of raw and cooked/manufactured foods for composition, quality and safety.
- Food ingredients, their uses in food preparations and food production on a large scale.
- Product specifications and food product development.
- Sensory evaluation and acceptability.
- Industrial practices, systems control, distribution channels, consumer purchase patterns.
- Food packaging and labeling.
- Ability to use information technology to support product design.
- Skills in food preparation and cooking.
- Ability to design, analyse, follow a design brief and adapt recipes.

After successful completion of 10+2 or equivalent examination, one can pursue short term certificate, craft and diploma courses at various institutes/colleges in different states, as well as at the Central Food Technological Research Institute [CFTRI], Mysore. Such courses are suitable for self-employment and for placement in small scale units of food preservation and processing, and catering establishments. Bachelor's and Master's degrees and research qualifications provide the most comprehensive grounding for jobs in the food industry, particularly large scale units, and for taking up research and training as well as entrepreneurship. Many universities in India and abroad offer graduate and post graduate degrees in the food technology. There are institutes offering post graduate courses in specialised aspects of Food Processing and Technology like National Institute of Food Technology and Entrepreneurship Management (NIFTEM) at Sonapat.

SCOPE

The demand for processed, packed and convenient food with prolonged shelf life requires well-trained human resource in the food industry. There is an encouraging, challenging and rewarding future for professions and careers in Food Technology and Food Processing industry. As this field requires the application of science and technology to the processing, utilisation, preservation, packaging and distribution of food and food products, it encompasses a diverse range of specialisations.

The work of food technologists is mainly in food industries, quality control departments, hotels, hospitals, labeling and packaging industries, breweries/distilleries, soft drink industries, dairy, confectionery, fish and meat processing, fruit and vegetable processing, processing of grains, cereals, millets, rice and flour mills, etc. Their expertise is useful in various departments such as purchase and storage, processing/manufacture, quality monitoring and management, safety assessment, as well as research and development. Besides this, entrepreneurship is a highly rewarding avenue. There are various avenues for employment.

CAREER AVENUES

- Production Managers
- Project Implementation
- Marketing and Sales Personnel
- Sensory Evaluation
- Quality Assurance
- Research and Development, Product Development
- Project Financing
- Project Appraisal
- Teaching and Research
- Entrepreneurship Development
- Consultancy
- Technical Marketing of products

With globalisation, Indian shores have opened up to foreign investments and technologies. As a result, many foreign companies and multinational companies are setting up their production, R&D, educational and outsourcing facilities in our country. Thus there is ample scope for food technologists/scientists in Indian as well as foreign organisations. Also, food processing industry provides good opportunity for export of products. Employment exchanges will also be strengthened and upgraded.

Self Employment Avenues: Food processing in India has always been practised as household or cottage scale activity. Despite lack of basic training in food processing operations, sweets, papads, murrabas, pickles, fried snacks, roasted and puffed cereals were prepared and marketed for local consumption. Now with the growth in agriculture, horticulture and pisciculture, the production of raw material has improved. Also the Government is giving incentives and support for entrepreneurs who want to start their own enterprise by way of providing finances, training, infrastructure and marketing facilities. Financial support is provided by many banks, with encouragement for women entrepreneurs. State Governments also contribute by providing space to those desirous of obtaining the same. A self employment venture in food technology may be highly technology-oriented and investment-intensive, or it can be a very low key technology and low investment unit, e.g., salted peanuts, drinking water pouches, dehydrated products, pickles, among others.

The Indian food industry with a size of 61 billion US dollars, ranks 5th in terms of size, contributes nearly 6 per cent of GDP, 13 per cent of Indian exports and involves 6 per cent of total industrial investment in the country. Besides, it is estimated to grow at the rate of 20 per cent of which processed food segment accounts for 25 per cent. Key segments of this industry are milk and milk products, snack foods, bakery products, fruit and vegetable products, beverages (alcoholic and non alcoholic), fish and meat processing, food processing machines and allied equipment. Exports are rising and this boosts employment avenues.

KEY TERMS

Food processing, food technology, food preservation, food science, food spoilage, food product development

REVIEW QUESTIONS

1. Explain the following terms: (A) Food Science (B) Food Processing (C) Food Technology (D) Food Manufacturing and (E) Food Spoilage
2. Explain briefly the significance of Food Technology. How has it affected the life of modern housewives, specially working women?
3. List some of the old methods of food preservation followed at home giving examples and their viability in present times.
4. Give a brief account of development of food preservation to its present status.
5. As a prospective food technologist what knowledge and skills does the industry require you to have?
6. Keeping the concept of health and wellness in mind, explain with examples how food scientists are trying to enhance the food values in processed and packaged foods.
7. Explain the following briefly:
 - Why do we need to process and preserve food?
 - What causes food spoilage and renders it unfit for human consumption?
 - Food spoilage is generally caused by bacteria. What are the four conditions that bacteria need to grow and multiply?
 - What is done in food processing to extend shelf life?
 - After the completion of 10+2 examination what is the professional scope in the field of Food Processing and Technology?

PRACTICAL 1

Theme: Design, Prepare and Evaluate a Processed Food Product

- Tasks:
1. Identify and prepare a product that can be preserved.
 2. Evaluate the product for acceptability.
 3. Prepare a label.

Purpose

This practical is intended to give the students first hand experience of planning, preparing, packaging and labeling a processed product which can be preserved. It will also provide an opportunity to appreciate the importance of maintaining hygiene throughout the process and to evaluate the processed product.

Conducting the Practical

Divide the class into groups of 5-6 students each. Each group should do the practical separately following the steps given below:

1. Identify a product that has long shelf life (that can be preserved and stored) that you would like to prepare, e.g., pickles, jams, squash, murabba, papad.
2. Try and make it different from products already available in the market by using different raw ingredient(s) or consider using artificial sweetener partly instead of sugar. Make approximately 500 gm of the product. Try to use locally available fruits and vegetables/ fruit or vegetable peels e.g., watermelon rind, orange peel or lemon rind/ sweet lime rind, pumpkin seeds, melon seeds, dudhi peel.
3. Make a list of vegetables/fruits, ingredients, preservatives, utensils, gadgets and medium of heat required, and collect all.
4. List the criteria used in the selection of raw materials, equipment and accessories.
5. Write the recipe and method of preparation, step-wise, in detail.
6. Identify the packaging material e.g., glass/plastic bottle or polyethylene pouches or bags.
7. Prepare the product under as hygienic conditions as possible.
8. Do costing in terms of cost of food materials and ingredients, energy consumed, labour cost and cost of storage and packing material.

9. Evaluate the product in terms of texture, taste, colour and quality and write down your observations.
10. Also prepare a label for the product. The label information should include the following:
 - a) Name of the product and a picture or drawing (if possible).
 - b) Name and address of the manufacturer.
 - c) List of ingredients used (the ingredients should be listed in descending order of the proportions used), net weight/volume.
 - d) Instructions for use (if any).
 - e) Storage instructions.
 - f) Indicate the 'Use By' or 'Best Before' date.

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CHAPTER

6

FOOD QUALITY AND FOOD SAFETY

LEARNING OBJECTIVES

After completing this chapter the learner will be able to:

- explain the importance of various issues related to food safety and quality
 - understand how food-borne illnesses occur
 - know about national and international food standards and their role in ensuring food quality and safety
 - understand the importance of food safety management systems
 - be acquainted with various career avenues / options in this area.
-

INTRODUCTION

Food is a major determinant of health, nutritional status and productivity of the population. It is, therefore, essential that the food we consume is wholesome and safe. Unsafe food can lead to a large number of food-borne diseases. You may have seen reports in the newspapers about health problems caused by contaminated or adulterated foods. Globally, food-borne illness is a major problem of public health concern. In India, the National Family Health Survey, 2015–2016 stated

that more than 2 lakh children less than five years of age suffered from acute diarrhea. Food-borne illness can not only result in mortality but can damage trade and tourism, lead to loss of earnings, unemployment and litigation and thus can impede economic growth, and therefore food safety and quality have gained worldwide significance.

SIGNIFICANCE

Food safety and quality are important at the home level, but are critical in large scale food production and processing, and also where food is freshly prepared and served. In the past, many foods were processed at home. Advancement in technology and processing, higher per capita incomes and better purchasing power as well as increased consumer demand have led to a variety of processed foods, food for health / functional foods being manufactured. Safety of such foods needs to be assessed.

The quality of food stuff, raw as well as processed is of public health concern and must be addressed. In the past decade, safety challenges faced globally as well as in India have changed significantly and issues related to food quality and food safety have gained tremendous importance. A number of factors are responsible for this:

- With fast changing lifestyles and eating habits, more people are eating outside their homes. In commercial settings, foods are prepared in bulk handled by many persons, thus there are more chances of food getting contaminated. Further, food items are prepared many hours in advance, and may spoil if not stored appropriately.
- There are many processed and packaged foods. Safety of these foods is important.
- Spices and condiments, oilseeds were processed at home in former times and purity of these were not a concern. In today's world, pre-packaged individual spices, condiments, spice powders and mixes are in demand, especially in cities and metros. Quality of even raw food stuff besides processed foods is of public health concern and must be addressed.
- Logistics governing transport of bulk food is complex and there is a long gap between processing and consumption. Thus risk assessment and safety management during mass production and mass distribution is critical.
- Microbial adaptations, antibiotic resistance, altered human susceptibility and international traveling have all contributed to increasing incidence of food-borne microbial diseases. Nearly half of

all known food-borne pathogens have been discovered during the past 25-30 years. There are still many food borne illnesses of unknown etiology. This is an issue of global public health concern and there is a need to detect, identify and recognise emerging pathogens and establish active surveillance networks, nationally and internationally.

- India is a signatory to the World Trade Organisation (WTO) non-tariff agreement, which has provided greater access to world markets and opportunities to all countries to enter international trade. In this scenario, it has become essential for every country to protect the safety and quality of foods and also ensure that imported foods are of good quality and safe to eat. Effective food standards and control systems are required to protect food production within the country as well as to facilitate trade with other nations. All food manufacturers are required to meet the given standards of quality and safety, and need to have their products regularly tested.
- Pollution in atmosphere, soil and water, including use of pesticides in agriculture, bring their share of contaminants. Also use of additives such as preservatives, colourants, flavouring agents and other substances such as stabilisers makes the analysis of food for various components—both nutrients and contaminants—imperative.

Owing to the above factors, there is a growing concern for safe, wholesome and nutritious foods in a highly dynamic food business environment, which in turn has greatly expanded the scope and has increased career opportunities in this sector. Before learning about the various career options in this field, it will be worthwhile for us to understand the basic concepts regarding food quality, food safety, risk assessment, food standards and quality management systems.

BASIC CONCEPTS

Food Safety

Food safety means assurance that food is acceptable for human consumption according to its intended use. An understanding of food safety is improved by defining two other concepts — toxicity and hazard.

Toxicity is the capacity of a substance to produce harm or injury of any kind under any conditions. *Hazard* is the relative probability that harm or injury will result when substance is not used in a prescribed manner and quantity. Hazards can be physical, chemical and biological causing harmful / adverse effects on the health of consumers.

Physical hazard is any physical material not normally found in food, which causes illness or injury and includes wood, stones, parts of pests, hair etc. (Fig. 6.1).

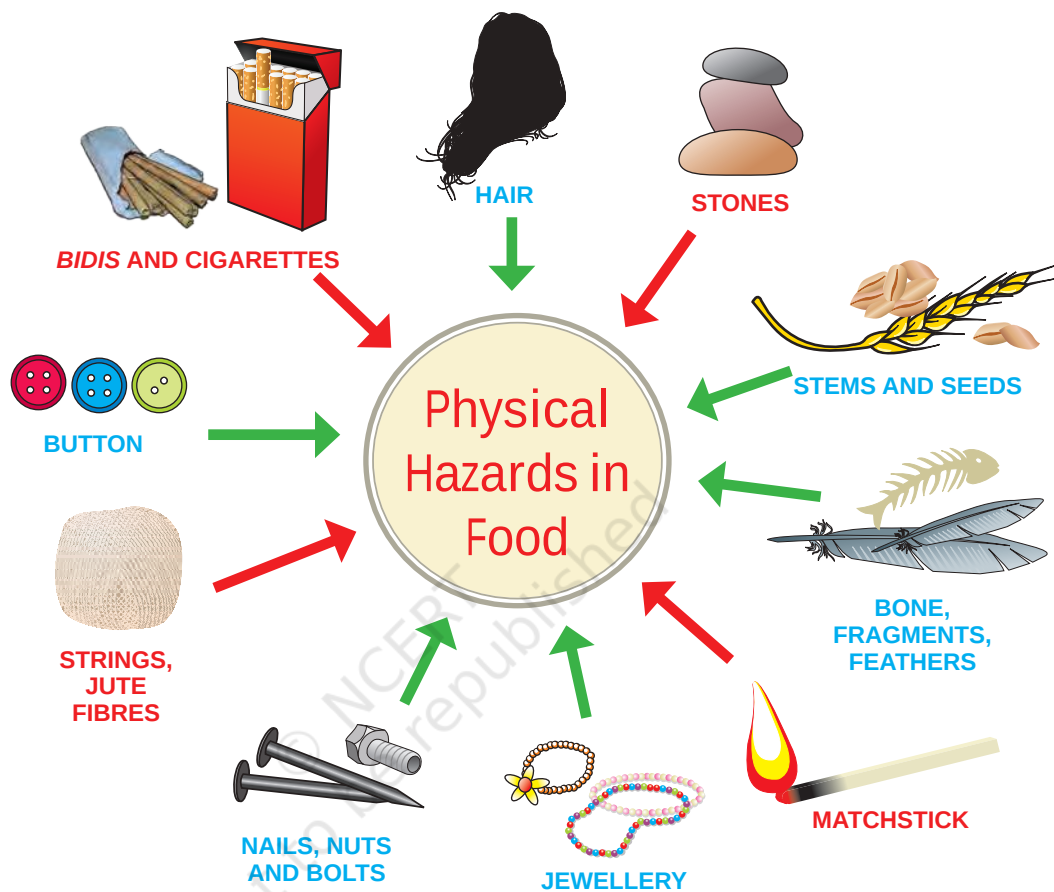


Fig. 6.1.: Physical hazards in foods

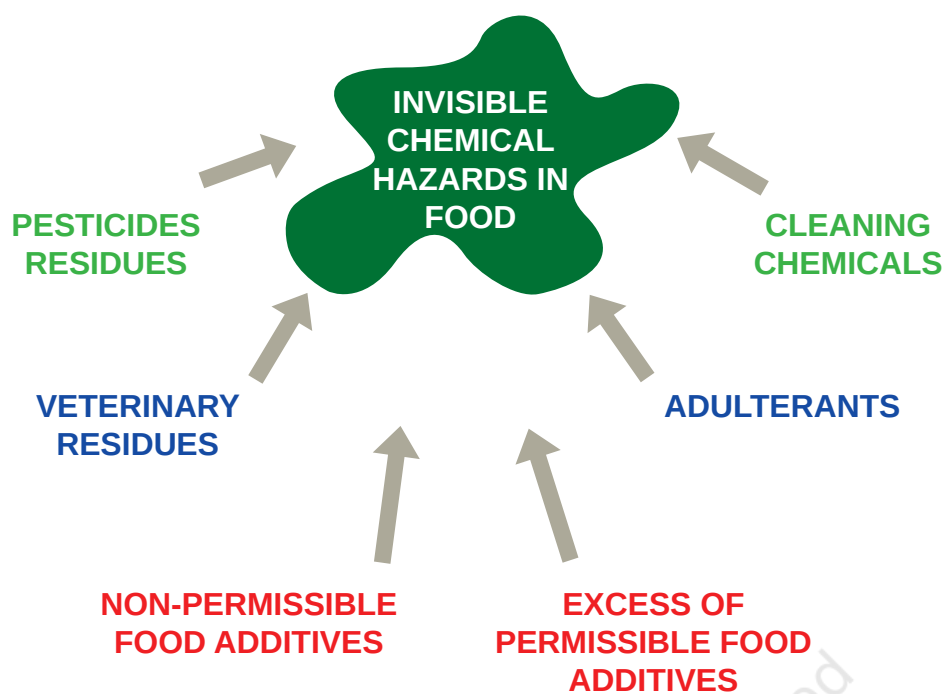


Fig. 6.2: Chemical hazards in foods

Chemical hazards are chemicals or deleterious substances which may be intentionally or un-intentionally added to foods. This category of hazards includes pesticides, chemical residues, toxic metals, polychlorinated biphenyls, preservatives, food colours and other additives (Fig. 6.2).

Biological hazards are living organisms and include microbiological organisms (Fig. 6.3 and 6.4). Those micro-organisms which are associated with food and cause diseases are termed food-borne pathogens. There are two types of food-borne diseases from microbial pathogens—infections and poisoning.

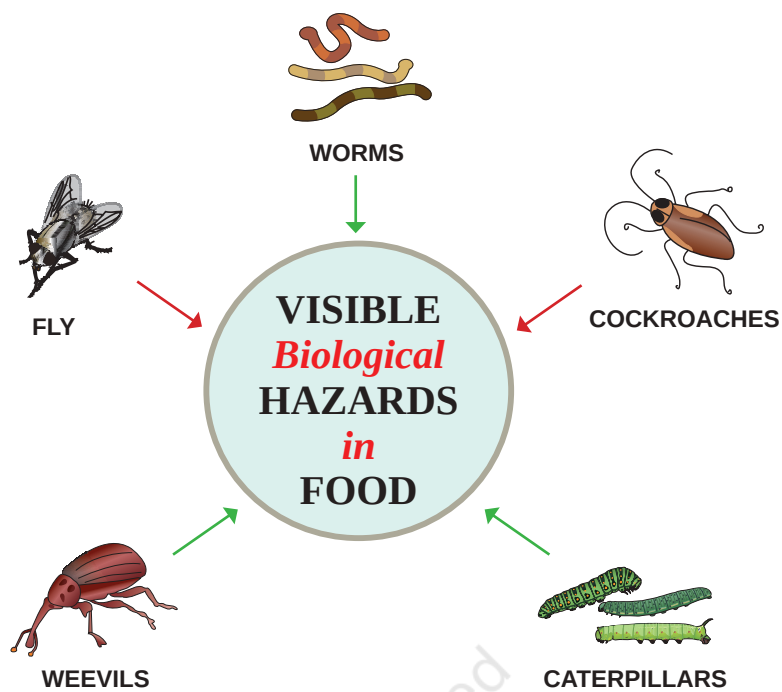


Fig. 6.3.: Visible biological hazards in foods

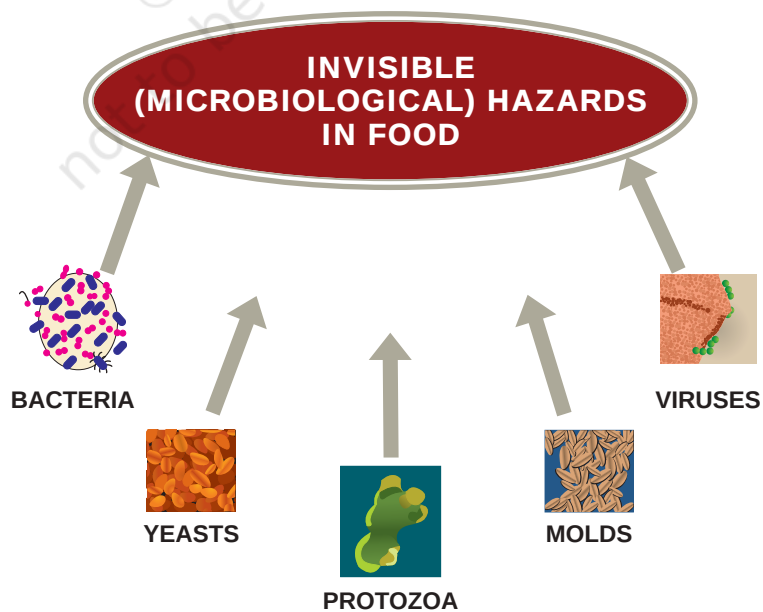


Fig. 6.4.: Invisible/microbiological hazards in foods

Food infection / Food Poisoning results from ingestion of live pathogenic organisms which multiply in the body and cause disease. *Salmonella* is a classic example. This organism exists in the intestinal tract of animals. Raw milk and eggs are also sources. Heat destroys *Salmonella*, however, inadequate cooking allows some organisms to survive. Often *Salmonella* is spread through cross-contamination. This could happen when a cook cuts raw meat/poultry on a chopping board and without cleaning uses it for another food which does not involve any cooking, such as salad. Food may become infected by *Salmonella* if an infected food handler does not wash hands with soap after using bathroom and before touching food. *Salmonella* can reproduce very quickly and double their number every 20 minutes. The symptoms of *Salmonella* infection include diarrhea, fever and abdominal cramps.

Food intoxication: Some bacteria produce harmful toxins which are present in food even if pathogen has been killed. Organisms produce toxins when the food has not been hot enough or cold enough. Toxins in food cannot be detected by smell, appearance or taste. Hence foods which smell and appear good are not necessarily safe. One example of such an organism is *Staphylococcus aureus*. Such organisms exist in air, dust, water. They are also present in the nasal passage, throat and on skin, hair of 50 per cent of healthy individuals. People who carry this organism, contaminate food if they touch these places on body while food handling. Diarrhea is also one of the symptoms of this contamination.

Parasites can also cause infestation, e.g., worm infestation by tape worm in pork. In addition to this, food can be infested by pests and insects (Fig. 6.5).

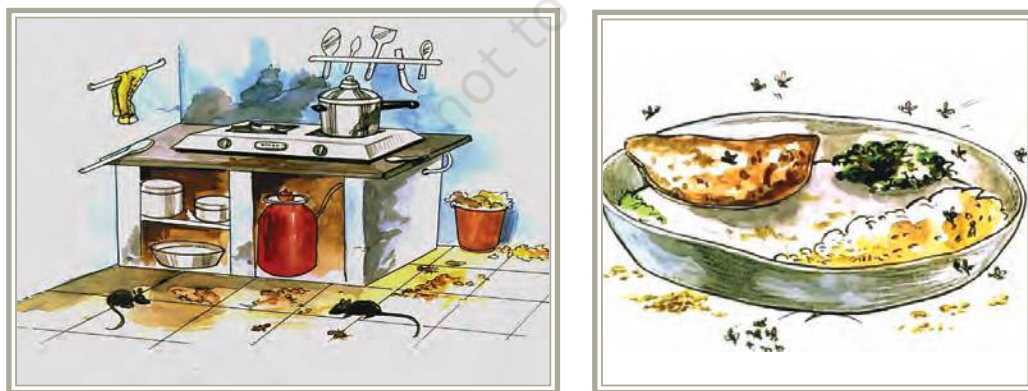


Fig. 6.5: Infestation of foods

Among the various hazards, biological hazards are an important cause of food-borne illnesses. In spite of all the efforts in the area of food safety, microbial food-borne pathogens are still a serious concern and new pathogens continue to emerge.

Factors that are important in the emergence of pathogens include human host, animal hosts and their interactions with humans, the pathogen itself, and the environment including how food is produced, processed, handled and stored. For example, changes in host susceptibility due to malnutrition, age and other conditions can allow for the emergence of new infections in vulnerable populations. Genetic exchange or mutations in the organisms can create new strains with the potential to cause disease. Exposure to new pathogens through changes in eating habits, climate, mass production, food processing and increased globalisation of the food supply can allow pathogens to emerge in new populations or new geographic areas.

Examples are *Norovirus*, *Rotavirus*, hepatitis E contributing to about 70 per cent of cases. New pathogens will continue to evolve and there is a need to develop methods to isolate them, control them and detect their presence in foods.

In the context of food safety, it is important to understand the terms contamination and adulteration.

Contamination: It is the presence of harmful, or objectionable foreign substances in food such as chemicals, micro-organisms, dilutants before/during or after processing or storage.

Adulteration: Food adulteration is the process in which the quality of food is lowered either by the addition of inferior quality material or by extraction of valuable ingredient. It not only includes the intentional addition or substitution of the substances but biological and chemical contamination during the period of growth, storage, processing, transport and distribution of the food products. It is also responsible for lowering or degradation of the quality of food products.

Adulterants: are those substances which are used for making the food products unsafe for human consumption.

Having understood what food safety is, let us discuss food quality.

Food Quality: The term food quality refers to attributes that influence a product's value to consumers. This includes both negative attributes such as spoilage, contamination, adulteration, food safety hazards as well as positive attributes such as colour, flavour, texture. It is therefore a holistic concept integrating factors such as nutritional traits, sensorial properties (colour, texture, shape, appearance, taste, flavour, odour), social considerations, safety. Safety is a preliminary attribute and precursor of quality. In order to ensure that foods are safe and of good quality, across the world various governments and international bodies have laid down food standards that manufacturers/suppliers are expected to adhere to.

Thus, all food service providers (those involved at all stages of pre-preparation and preparation/processing, packaging and service) should adhere to good manufacturing practices and ensure food safety. Salient points to be borne in mind are:

1. Quality of raw materials and water
2. Cleanliness — of the premises, personnel, equipment, food preparation and storage and serving areas
3. Storage of food at appropriate temperature
4. Food hygiene
5. Good service practices.

ACTIVITY 1

Collect 5 fresh fruits, 5 fresh vegetables and one food preparation e.g., bread/chapati/roti and list the signs of quality in the given format. Store them at room temperature for one week, observe the changes and prepare a chart listing the changes in quality.

Name of Foodstuff / Product

	Fresh	During storage	
		Day 2 or 3	Day 7
Appearance i) Bright / Dull ii) Shrivelled iii) Mouldy			
Texture (Firmness/ softness/soggy)			
Colour			
Odour			

Food Standards

Effective food standards and control systems are required to integrate quality into every aspect of food production and service, to ensure the supply of hygienic, wholesome food as well as to facilitate trade within and between nations. There are four levels of standards which are well coordinated.

- Company Standards:* These are prepared by a Company for its own use. Normally, they are copies of National Standards.
- National Standards:* These are issued by the national standards body, Food Safety and Standards Authority of India (FSSAI).

- c. *Regional Standards:* Regional groups with similar geographical, climate, etc. have legislation standardisation bodies.
- d. *International Standards:* The International Organisation for Standardisation (ISO) and Codex Alimentarius Commission (CAC) publish international standards.

Food Standards and Regulations in India

Voluntary product certification: There are voluntary grading and marking schemes such as ISI mark of BIS and Agmark. The Bureau of Indian Standards (BIS) deals with standardisation of various consumer goods including food products and runs a voluntary certification scheme known as 'ISI' mark for processed foods. Agmark is a voluntary scheme of certification of agricultural products (raw and processed) for safeguarding the health of consumers.

Since the government had several regulations and laws, food industry found it cumbersome to adhere to. A need was therefore felt to integrate all such laws for regulating the quality of food. With this in view, *Indian Government* has passed Food Safety and Standards Act (FSSA), 2006, to bring the different pieces of legislation pertaining to food safety under one umbrella.

Food Safety and Standards Act (FSSA), 2006: The objects of the Act are to consolidate the laws relating to food. The Food Safety and Standards Authority of India (FSSAI) has been established under Food Safety and Standards, 2006, which consolidates various acts and orders that have hitherto handled food related issues in various Ministries and Departments. The Food Safety and Standards Authority of India was established for laying down *science-based standards* for food and to regulate their manufacture, storage, distribution, sale and import, to ensure availability of safe and wholesome food for human consumption. The Act has provisions for maintenance of hygienic conditions in and around manufacturing premises, assessment and management of risk factors to human health in a scientific manner, which were not specified in the PFA. The FSSA reflects the international shift in food laws, from compositional standards or vertical standards to safety or horizontal standards.

Food Safety and Standards Authority of India (FSSAI) has been mandated by the Food Safety Standards (FSS) Act, 2006 for performing the following functions:

- Framing of regulations to lay down the standards and guidelines for articles of food and system of enforcing various standards.

- Laying down mechanisms and guidelines for accreditation of certification bodies for certification of food safety management system for food businesses and accreditation of laboratories and notification of the accredited laboratories.
- To provide scientific advice and technical support to Central Government and State Governments for framing the policy and rules related to food safety and nutrition.
- Collect and collate data regarding food consumption, incidence and prevalence of biological risk, contaminants in food, residues of various contaminants in foods products, identification of emerging risks and introduction of rapid alert system.
- Creating an information network across the country so that the public, consumers, Panchayats, etc., receive rapid, reliable and objective information about food safety and issues of concern.
- Provide training programmes for persons who are involved or intend to get involved in food businesses.
- Contribute to the development of international technical standards for food, sanitary and phyto-sanitary standards.
- Promote general awareness about food safety and food standards.

For more information visit: <https://fssai.gov.in>

International Organisations and Agreements in the Area of Food Standards, Quality, Research and Trade

Since ancient times, governing authorities the world over, have made attempts to develop and implement food standards in order to protect health of consumers and prevent dishonest practices in sale of food. There have been several international organisations and agreements which have played a role in enhancing food safety, quality and security, facilitating research and trade. The major organisations which are playing a key role are:

1. Codex Alimentarius Commission (CAC)
2. International Organisation for Standardisation
3. World Trade Organisation

1. Codex Alimentarius Commission

CAC is an intergovernmental body formed with the objective of establishing international standards to protect the health of the consumers and facilitate

food and agricultural trade. In 2017, the membership of Codex was 187 member countries and one Member Organisation (European Community) respectively. India is a member through the Ministry of Health and Family Welfare. CAC has become the single most important international reference point for developments associated with food standards. The document published by the CAC is Codex Alimentarius which means 'Food Code' and is a collection of internationally adopted Food Standards. The document includes Standards, Codes of Practice, Guidelines and other recommendations in order to protect consumers and ensure fair practices in food trade. Different countries use Codex Standards to develop national standards.

The Prevention of Food Adulteration Act 1954 (PFA, 1954) was enacted by the Government of India to prevent adulteration of food. The Act has been amended over 200 times as per need. In addition to PFA, there are other Orders or Acts that help to ensure the quality of specific foods such as:

- Fruit and Vegetable Product Order: Specifications for fruit and vegetable products are laid down.
- Meat Food Products Order: Processing of meat products is licensed under this order.
- Vegetable Oil Products Order: Specifications for vanaspati, margarine and shortenings are laid down.

All such acts have been consolidated under the FSSA.

All food products manufactured in India, or imported and sold in India have to meet the requirements prescribed under the FSSA.

2. *International Organisation for Standardisation (ISO)*

The International Organisation for Standardisation (ISO) is a worldwide, non-governmental federation of national standards bodies (ISO member bodies). The mission of ISO is to promote the development of standardisation and related activities in the world with a view to facilitate the international exchange of goods and services, and to develop cooperation in the spheres of intellectual, scientific, technological and economic activity. The work done by ISO results in international agreements which are published as International Standards.

ISO 9000 is an international reference for quality requirements. It is concerned with "Quality Management" of an organisation. Adoption of these standards is voluntary. The difference between Codex and ISO are given in the box given hereby.

Differences between Codex and ISO

Codex	ISO
• Used to develop national regulations • Slow to change • Describe the minimal acceptable practices	• Voluntary • Standards are reviewed every five years. • Describe current standard industrial practices.

For more information visit <http://www.iso.org>

3. World Trade Organisation (WTO)

WTO was established in 1995. The main objective of WTO is to help trade flow smoothly, freely, fairly and predictably, by administering trade agreements, settling trade disputes, assisting countries in trade policy issues. The WTO Agreement covers goods, services and intellectual property.

In order to enforce adoption and implementation of standards, there is a need for a strong Food Control System. An effective food control system must consist of — (i) Food Inspection and (ii) Analytical capability.

Food Inspection: Conformity of products to standards is verified through inspection. This will ensure that all foods are produced, handled, processed, stored and distributed in compliance with regulations and legislation. Government / Municipal authorities appoint food inspectors to investigate the status of quality conformity to standards in their laboratories.

Analytical capability: There is need for well-equipped, state-of-the-art accredited laboratories to carry out analysis of food. Further, well-trained personnel having knowledge of principles of laboratory management and physical, chemical and microbiological analysis of food, test foods and food products are also required. A broad range of analytical capabilities is required for detecting food contaminants, environmental chemicals, biotoxins, pathogenic bacteria, food-borne viruses and parasites.

Food Safety Management Systems

Over the years, issues related to food safety and quality have gone beyond just the avoidance of food-borne pathogens, chemical toxicants and other hazards. A food hazard can enter/come into the food at any stage of the food chain, therefore, adequate control through out the food chain is essential. Food safety and quality can be ensured through:

- Good Manufacturing Practices (GMP)
- Good Handling Practices (GHP)
- Hazard Analysis Critical Control Points (HACCP)

Good Manufacturing Practices (GMP) are a part of quality assurance to ensure that manufacturers/processors take proactive steps to ensure that their products are safe. It enables to minimise or eliminate contamination and false labelling, thereby protecting the consumer from being misled and helping in purchasing products that are not harmful. GMP is a good business tool that helps to refine compliance and performance by the manufacturers/producers.

Good Handling Practices indicate a comprehensive approach from the farm to the store or consumer, in order to identify potential sources of risk and indicates what steps and procedures are taken to minimise the risk of contamination. It ensures that all persons who handle food have good hygiene practices.

Hazard Analysis Critical Control Point (HACCP)

HACCP is a means of providing assurance about safety of food. HACCP is an approach to food manufacture and storage in which raw materials and each individual step in a specific process are considered in detail and evaluated for its potential to contribute to the development of pathogenic micro organisms or other food hazards. It involves identification of hazards, assessment of chances of occurrence of hazards during each step /stage in the food chain — raw material procurement, manufacturing, distribution, usage of food products and defining measures for hazard(s) control.

ACTIVITY 2

Visit a nearby restaurant / canteen / dhaba / street food vending outlet and observe the following:

- The area where food is prepared and served
- How the food is prepared and stored
- How the food is served
- The food service area
- Washing area
- The area surrounding the unit
- All persons involved in handling the food from pre-preparation till its service.

Comment on the cleanliness and hygiene and give suggestions for improvement.

Prepare a pamphlet on food safety and hygiene for the workers using ICT.

Why implement HACCP?

- It is a preventive approach to ensure food safety.
- End product inspection and testing, although important, is time consuming, expensive and detects the problems only after they occur. In contrast, HACCP enables us to detect hazards at any stage of processing or manufacture in order to ensure a good quality end product, by taking appropriate action at the stage where the problem occurs.
- It enables producers, processors, distributors and exporters to utilise resources efficiently and in a cost effective manner for assuring food safety.
- FSSAI, 2006 places primary responsibility for safe food with producers and suppliers through HACCP, GMP, GHP. This is important for consumer protection and international food trade.
- It assures consistently good quality products.

SCOPE

India is experiencing growth in the area of food processing. The food industry in India accounts for about 26 per cent of the gross domestic product (GDP) and will be one of the major growth areas in the years ahead. This has given impetus to international trade but has also increased the responsibility to achieve appropriate level of safety in terms of sanitary and phyto-sanitary protection. Further, the Indian Food Safety and Standards Act of 2006, reflects a major shift in food laws and seeks to provide greater consumer protection by ensuring safety and wholesomeness of food at all stages of the food chain. This changing scenario has widened the scope and increased career options/opportunities in this area.

Professionals who take up careers in this area need to have adequate knowledge and expertise in Food Chemistry, Food Processing and Preservation, Food Analysis and Quality Control. It is also desirable to be well versed in Food Microbiology, Food Laws and Sensory Evaluation. Professionals may be employed with regulatory and public health agencies as food legislators, food safety officers (inspectors), food analysts/public analysts. Professionals can also work in voluntary agencies such as Agmark, BIS, as well as in the Quality Control Laboratories. One can work as food auditor after undergoing required training. Further, large food industries, flight kitchens, etc. have in-house quality control units which require trained professionals. In a Food Industry, numerous opportunities are available as shown in Fig. 6.6.

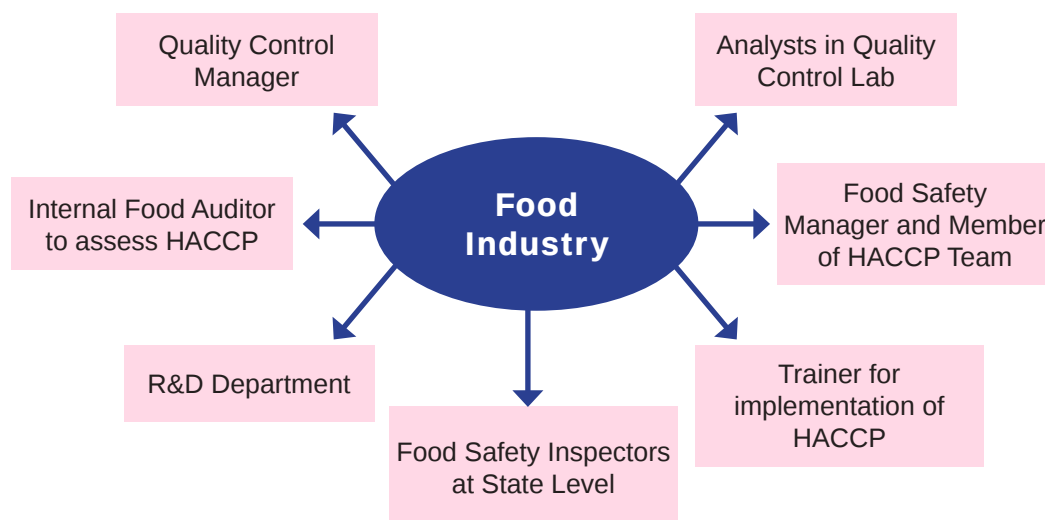


Fig. 6.6: Job Opportunities in Food Industry

Self-employment and Entrepreneurship: One can initiate entrepreneurship activities through analytical food laboratory, food safety consultancy and Food Safety and Sanitation Education.

Placement options are emerging at different levels in both regulatory and health agencies. Integrated approaches in Home Science curriculum, especially in the discipline of Food Science and Nutrition, impart the knowledge to improve safety and quality. The courses enable to develop skills necessary to understand and manage food safety hazards.

CAREER AVENUES

- Quality Control Laboratories in food industry as analysts or at managerial level
- Food testing laboratories in public and private sector — various positions including food inspectors, food testing
- Specialist in HACCP
- Food Auditors
- Quality Certification such as ISO
- Teaching and Academics
- Research
- Scientific writers
- In voluntary organisations in various capacities

KEY TERMS

Food borne illness, food poisoning, food quality, food safety, hazards, food standards, FSSAI.

REVIEW QUESTIONS

1. Explain why food safety and quality are of global concern.
2. Explain the terms: hazard, toxicity, contamination, food quality, adulteration.
3. What is Codex Alimentarius?
4. Discuss the significance of HACCP.
5. List the national and international food standards.

PRACTICAL 1

Theme: Test of Food Adulteration

- Tasks:**
1. Visit local shops and collect various food materials – raw and cooked
 2. Examine the foods for presence of adulterants
 3. Record observations

Purpose: This practical will expose the students to simple ways of identifying adulteration in foods and understand the importance of quality and safety.

Conducting the Practical

1. Divide the class into 3 groups.
2. Each group will bring samples of food as follows:
 - *Group A:* raw foods such as rice, wheat, pulses, spices such as mustard seeds, coriander seeds, *jeera*, tea leaves (Note : 100 g of each should be procured from two different shops, preferably loose unpacked materials should be procured).
 - *Group B* will bring snacks such as *pakodas*, *idlis*, *samosas* or any that are available locally from two or three different roadside vendors.
 - *Group C* will bring assorted *mithais*/Indian sweets from two different vendors.
3. All groups will use the work sheet given and evaluate the foods for the presence or absence of various hazards.

WORK SHEET

	Present in Large Amounts/ Numbers	Present in Moderate Amounts/ Numbers	Present in Small Amounts/ Numbers	Absent
Have you found any of the following raw food ingredients used in your preparations?				
Hair				
Stones				
Stems & seeds				
Matchsticks				
Stapler pins				
Bidis/ Cigarettes				
Camphor balls				
Worms/Insect parts				
Mercury balls				
Infested grains				
Any other				

4. Use separate worksheets for each vendor and each food.
5. Compare and comment on the quality of various food items.

PRACTICAL 2

Theme: Qualitative Tests for Food Adulteration

- Tasks:**
1. Collect all the chemicals and glassware needed for the tests listed below.
 2. Collect the foods to be tested from different sources such as branded, unbranded packed and loose.
 3. Perform the tests for the foodstuffs as per the procedures given.
 4. Interpret the results of the tests.
 5. Compare the branded, unbranded packed and loose food items and comment on the quality of the food stuffs.

Purpose: This practical will acquaint students with some qualitative tests of food adulteration. It will provide hands-on experience in testing the foods and enable them to comment on the quality of the tested foods. It will also enable them to appreciate the importance of good quality foodstuffs.

Conducting the Practical

Class is to be divided into groups of 3-4 each. Each group is to bring to class samples of the following:

1. Pepper: branded packed, unbranded packed and loose – 25 g each
2. Ice cream : branded and unbranded (manufactured and sold by local vendor) 1 small cup
3. Milk : branded packaged, loose (100ml)
4. Vegetable oil :– sesame oil, groundnut oil, hydrogenated fat/ vanaspati, branded and unbranded loose pure ghee(25g each)
5. Tea leaves: branded , loose locally available leaf teas (3 in number) 100g of each sample
6. Turmeric powder: branded, unbranded packed and loose
7. Asafoetida powder: branded and unbranded loose

Collect the chemicals as listed in the practical for each foodstuff.

Conduct the tests as per the procedures outlined.

Tests

- 1. Test for Detection of Sesame Oil in Pure Ghee to determine whether the ghee is adulterated with hydrogenated fat/ vanaspati which contains sesame oil.**

Chemicals: 1 per cent sucrose solution
Concentrated hydrochloric acid

Procedure: Take 5 test tubes.
In Test tube A pour approx 2 ml of sesame oil.
In Test tube B pour approx 2 ml of groundnut oil.
In Test tube C pour approx 2 ml of melted vanaspati.
In Test tube D pour approx 2 ml of melted branded ghee.
In Test tube E pour approx 2 ml of melted loose ghee.

To each test tube, add 1 ml of 1 per cent sucrose solution.

Then to each test tube, add 1ml of concentrated hydrochloric acid.

Shake each test tube well.

Observation: Note if a pink colour develops. Development of pink colour indicates presence of sesame oil.

Interpretation: Are the ghee samples pure or adulterated?

- 2. Test for presence of excessive amount of stalks in tea leaves**

Procedure:

1. Weigh 5 gm of tea leaves into a conical flask or a beaker. Label the container.
2. To this add 500 ml of water and boil the flask/beaker for 15 minutes.
3. Filter out the water.
4. Transfer the tea sample to a flat white plate and with a forceps, pick out the stalks and place them in a preweighed petridish or crucible.
5. Dry the stalks at 100 degrees until all the moisture has evaporated.

6. Weigh the stalks.
7. Calculate the percentage of stalks in the tea.

Interpretation: The proportion of stalks in the tea should be less than 25 per cent.

3. Test for detecting Light berries in Black Pepper

Chemicals: Alcohol water mixture (sp.gr 0.8 to 0.82)

- Procedure:**
1. Take about 10g of the pepper sample in a 250 ml beaker.
 2. Add approximately 150–200 ml of the alcohol water mixture.
 3. Pick out the berries which rise to the top and float.
 4. Dry the berries and weigh them.
 5. Calculate the percentage of dried berries.

Interpretation: The higher percentage of light berries, suggests that the berries have been extracted from the black berries.

4. Test for the presence of metanil yellow in turmeric

Chemicals: Hydrochloric acid concentrated

- Procedure:**
1. Take about 2 g of turmeric sample in a test tube.
 2. Add 5ml of distilled water.
 3. Mix well.
 4. Add concentrated hydrochloric acid (about 5 ml to 10 ml) slowly into the tube.

Observation: Observe the test-tube for development of pink to magenta colour.

Interpretation: Development of pink to magenta colour denotes the presence of metanil yellow which is a toxic adulterant.

5. Test for the presence of starch in milk and ice cream**Chemicals:** Iodine solution**Procedure:**

1. In a test tube, add approximately 10 ml of milk or melted ice cream.
2. Add iodine solution, drop by drop.
3. Mix the contents of the test tube.

Observation: Observe for appearance of blue colour.**Interpretation:** Development of blue colour indicates the presence of starch in the sample.**6. Test for the presence of colophenial resins in asafetida (hing)****Chemicals:** 0.5 per cent copper acetate solution in water
Petroleum ether**Procedure:**

1. Take about 1-2 g of asafetida sample in a test tube. Add approximately 10 ml of petroleum ether.
2. Shake the test tube well.
3. Filter the contents of the tube.
4. To 5 ml of the filtrate add 5 ml of copper acetate solution.
5. Shake and allow the layers to separate.

Observation: Note whether a blue or green colour develops in the ether layer.**Interpretation:** Development of blue or green colour denotes the presence of colophenial resins that are not permitted.

REFERENCES FOR FURTHER READING

CHANDRASHEKAR, U. 2002. Food Science and Applications in Indian Cookery. Phoenix Publishing House Pvt. Ltd.

FOOD SAFETY AND STANDARDS AUTHORITY OF INDIA. Ministry of Health and Family Welfare, Government of India.

INSEL, P., TURNER, E.R., ROSS, D. *Nutrition*, 3rd edition. American Dietetic Association.

JOOD, S. AND N. KHETARPAUL, 1991. *Food Preservation*. Agrotech Publishing Academy. Jaipur.

JOSHI, S.A. 2010. *Nutrition and Dietetics with Indian Case Studies*. Tata McGraw Hill Education Pvt. Ltd., Mumbai.

MANAY, S.N. AND M. SHADAKSHARAWAMY, 2001. (Eds) *Foods, Facts and Principles*. 3rd edition, New Age International. New Delhi.

MUDAMBI, S.R. AND M.V. RAJGOPAL 2006. *Fundamentals of Foods and Nutrition*. Wiley Eastern Ltd.

RAHEENA BEGUM. 1989. *A Textbook of Foods, Nutrition and Dietetics*. Sterling Publishers Pvt. Ltd. New Delhi.

RAO, J.P. 2006. *Nutrition and Food Science*. Aavishkar Publishers, Distributors, Jaipur.

SATARKAR, A. 2008. *Food Science and Nutrition*. ABD Publishers. Jaipur.

SETHI, M. 2008. *Institutional Food Management*. New Age Publishers. New Delhi.

SUBBULAKSHMI, G. AND S.A. UDIPI, 2006. *Food Processing and Preservation*. New Age Publishers, New Delhi.

UNICEF State of the World's Children. Report.

UNICEF website www.unicef.org

WADHWA, A. AND S. SHARMA, 2003. *Nutrition in the Community. A Textbook*. Elite Publishing House Pvt. Ltd.

Websites of Government of India's Ministry of Food Processing, Ministry of Health and Family Welfare, Women and Child Development

WHO website www.whoindia.org, www.who.int

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UNIT III

HUMAN DEVELOPMENT AND FAMILY STUDIES

INTRODUCTION

In Class XI, you have read about the importance of studying development of a person from a young age onwards. There are many changes that take place in a person as he or she grows up. Students, who choose to specialise in Human Development and Family Studies (HDFS) study these changes and also learn the ways in which they can provide effective and meaningful services for people at different ages, with different needs and under different circumstances. In the forthcoming chapters, we will explore the different options for careers in this domain. We all know that studying HDFS helps us to know ourselves and the people around us better and to lead a more meaningful life, well integrated in our cultural tradition, with the knowledge of the developing world, science, technology and progress. The home and workplace are treated with equal respect and the personal, family life of any individual is given full consideration in understanding the person.

In accordance with the National Curriculum Framework (2005), all ethnic groups, languages, religions and communities are regarded as equal. In the forthcoming chapters, we will explore the careers that are available to students who wish to work in this field.

At the college level, the discipline of HDFS is referred to by different names in different institutions as Child Development, Human Development and Childhood Studies, and Human Ecology. While the core of the discipline remains the same, there may be slight differences in their perspectives. For example, when the discipline is referred to as Child Development, there may be a greater focus on childhood and less emphasis on the life span development. However, these differences are only a matter of degree and the substantive component of the discipline remains essentially similar.

A career in HDFS is especially suitable for those who feel drawn towards understanding interpersonal relationships and find it comfortable to talk about these issues. A fair degree of honest self-reflection is usually a part and parcel of the career in HDFS – this can be exciting as you learn more about yourself and others around you.

While the HDFS discipline helps you to develop the abilities to work with individuals and groups across the life span, from the very young to the old, you will find that the organisations and the programmes in the field focus on specific dimensions. Some may work with children in the early childhood years to create conditions for their all round development; some may be involved in providing counselling services to specific age groups; and some may strive to design interventions in the sector of education. In fact, further in the chapter, we have identified the major areas of work within the domain of HDFS and presented the information accordingly as follows:

(i) Early Childhood Care and Education, (ii) Guidance and Counselling, (iii) Special Education and Support Services, and (iv) Management of Support Services, Institutions and Programmes for Children, Youth and Elderly.

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EARLY CHILDHOOD CARE AND EDUCATION

LEARNING OBJECTIVES

After completing this section the learner will be able to:

- understand the basic principles of Early Childhood Care and Education (ECCE) as they apply to Indian society
 - understand the importance of early care and learning experiences for children
 - understand how children play and learn
 - explain the knowledge and skills required for a career in ECCE
-

SIGNIFICANCE

Early childhood care and education is a very important area of study in Human Development. We have learnt in Class XI, how the infant begins to learn from a very early age. In addition to learning new things about the world around him or her, the infant is developing an attachment with family members, particularly with the mother and father, as well as with siblings, and grandparents. The young child also begins to recognise other family members and people whom he or she meets regularly. This way, the child will also be able to distinguish between people who he/she recognises and those who look unfamiliar. This recognition is manifested in the behaviour where a young baby of around 8–12 months can show

fear of unknown people. This fear is not simply an emotional display, it shows a capacity to recognise familiar faces and thereby indicates a fear of unfamiliar people. Further, the child is deeply attached to the mother who is generally, but not always, the primary caregiver and can also start to cry when she leaves the room. The young child of around one year will try to cling to the mother or other caregiver and follow her everywhere. In most cases, this behaviour is soon discarded because the child develops the ability to know that the mother does not 'vanish' when she goes into another room. The child develops a sense of security even about the primary caregiver's absence. Further, the child is growing very rapidly, learning to walk, pick up things with precision, and manage his or her body in many ways. The child is also developing control over bladder and bowel movements.

In most cases, children are brought up exclusively within a family for the first few years. In some instances, where the mother is working outside the home, there may be a need for substitute provisions for the care of the child. Traditionally, the care of the child was usually the responsibility of another female of the household who lived with the family permanently (as in joint families) or temporarily resided with the family for support in child care. In recent times, however, there has been an increasing need for the provision of institutional child care. This can take the form of informal family care settings, where a woman in a neighbourhood sets up a 'crèche' in her home for business purposes or an institutionalised centre where children are cared for. The crèche or family care is primarily seen as substitute for the mother/primary caregiver. However, these may not be seen as an essential experience for the enrichment of a child's learning and development.

ACTIVITY 1

From your memory of last year's course, list some of the things that you think a child should know how to do or be capable of performing before entering Class 1. For example, can a child walk, talk, read full sentences?

(Teacher should discuss these and then add/delete from to the list.)

Ideally, once the child is around three years of age, the activities and experiences begin to expand. However, experts differ on the exact age until which a child should be kept at home, before entry to formal school. Although the child is still capable of enjoying only informal and small group activities, there is an increasing value for opportunities to engage

with people outside the family and close community. These early years are extremely important for a child to learn new things, explore the environment and discover the world around. Once the children learn to walk and run, manipulate things and speak, they become capable of actively engaging with the environment. It is in interaction with people and materials around them that children at this age gather all the information. Vocabulary in the mother tongue is growing rapidly at this time, as is the child's understanding of nature like sand, water, flowers, birds, machines and other materials. They are curious to learn more and are often heard asking adults when they see something, "Why is this so?". Thus satisfying a child's curiosity by providing an optimal learning environment without overburdening the child to do more than what s/he is capable of is an essential consideration at this age. If we force a child to sit in one place and learn like in a formal school meant for older children, the curiosity will diminish, and a child will feel anxious and insecure. It is thus very important to understand that the best learning environment for a child at this age is one that is safe, secure, loving, with a variety of people and play materials (toys or natural), and the presence of a caring adult, whether it is the mother, grandparent, or a preschool teacher, or a sibling.

The learning and other experiences provided by a good preschool have been found to be extremely beneficial for young children at this age. The child centred approach and the play way method which makes learning enjoyable is ideally suited for young children. Children enjoy the company of other children and learn very quickly to do things that often surprise even the parents. One such observation that often takes place in preschool settings is the sheer wonder that parents of young children express when their child has been known to eat by himself or herself, and also eats things that he/she may not have eaten at home. Children learn very quickly among peers and for these and other reasons, preschool experiences become important at this age. Also, for children who live in difficult circumstances or who may need additional support for learning, a good preschool environment is known to be very beneficial.

Does that mean that children who do not go to nursery school are not learning? Absolutely not! All children learn, naturally. Preschool experiences help to enhance the child's exposure to other adults and other environments and materials; and more importantly, to prepare the young child for formal schooling. Preschool education in a programme which is child-centred and informal, provides the child with a good learning environment that complements the advantages of a good learning environment at home. Also, if in situations where the home environment may be lacking in some way or the other, the preschool experience can be an important factor in assisting the child's growth and development outside the home.

In several communities, especially those living in remote areas or those with fewer resources at their disposal, older children who are of school-going age are often given the responsibility for the care of younger ones, as parents go out for work. Consequently, the older child is unable to participate in schooling. Therefore institutional care for young children is beneficial for the older child as well since he/she is released from the task of child care and can attend school. Thus, children, both young and of school age, can be helped to have access to services when they live in difficult circumstances. Further these services also provide for interventions in nutrition, health, besides learning as and when there is a requirement. Thus, there is a support to society in the task of developing and building the next generation for the future. Early childhood care and education and care is an activity that benefits childhood in different circumstances, as well as families by providing the support to parents and the community in these basic tasks.

As per the NCF (2005) Position Paper on Early Childhood Education published by NCERT, the basic objectives of ECCE are:

- Holistic development of the child to enable him/her to realise the potential
- Preparation for school
- Providing support services for women and children

BASIC CONCEPTS

There are some important concepts associated with early childhood care and education that we must understand before proceeding further. Early childhood is the phase of life from birth till 8 years of age, and is commonly divided into two, from birth to three years and 3–8 years, based on the developmental changes that characterise young children in these two stages. Infancy is the period between birth and one year (some experts also denote infancy till two years), during which a child is largely dependent upon adults for everyday needs. This period is of intense dependence on adults, usually the mother or father, or any other primary caregiver who maybe the grandmother or helper. In circumstances where the mother is employed outside the home, the infant has to be cared for by a substitute caregiver, who may be a family member or a hired person. The location of the substitute care arrangement may be the child's own home or the home of the caregiver or an institution or crèche. Crèche is the name given to an institutional setting that is particularly designed for the care of infants and young children in the absence of home care. Day care, on the other hand, is the care of children in the preschool years and may include infants

and preschoolers, who are cared for, again in the absence of a primary caregiver at home.

Day care and crèches are usually all-day programmes. Teachers and helpers in these programmes need to be especially trained for the care of very young children, their safety, their feeding, toilet habits, language development, social and emotional needs and learning. Teachers, who have to deal with children above three years of age, require different skill sets. The child between two and three is sometimes referred to as a toddler, a term that is derived from the jumpy walk that a young child has at this age. A preschool child is so called because he or she is now ready for experiencing some sort of environment beyond that of the family (extra-familial). Even for this programme, a teacher needs to be specially trained as a pre-school or nursery school teacher. Some pre-schools for young children are often called Montessori schools. These are schools based on the principles of early childhood education as outlined by a well-known educationist Maria Montessori. It is worth mentioning that the Government of India has addressed the needs of this age grouping by offering pre-school education through the *anganwadis* that operate under its *Integrated Child Development Services* (ICDS). There are angawadis in urban and rural areas.

Some of the other concepts related to this field that we need to know, deal with understanding the fact that children at this age have a very different approach to understanding the things that happen around them. The developmental psychologist Jean Piaget spent his life trying to comprehend and explain that young children have different ways of understanding the world, due to which, they need a supportive environment to explore phenomena in their own ways. You have studied these features of children's development last year in Class XI. It is important to keep those details in mind in order to understand the principles of care and education of young children.

Another important principle to be kept in mind is the fact that any ECCE institution must realise the importance of the cultural context within which it operates and works along with, rather than in opposition to, the family. Although this is true for all ages, it becomes more significant for the young child since he or she is unable to make distinctions about different perspectives and different realities in the ways that an older child or adult can. Thus we have to understand that the educational and care arrangements for children must follow these principles.

As per the NCF (2005) on ECCE, the guiding principles of ECCE are:

- Play as the basis for learning
- Art as the basis of education
- Recognition of the special features of children's thinking
- Primacy of experience rather than expertise (i.e., experiential learning is emphasised)
- Experience of familiarity and challenge in everyday routines
- Mix of formal and informal interactions
- Blend of textual and cultural sources
- Use of local materials, arts and knowledge
- Developmentally appropriate practices, flexibility and plurality
- Health, well-being and healthy habits.

ACTIVITY 2

From your childhood, recall and write down any story that you heard and that you enjoyed a lot. Also mention who used to tell you the story and what you liked about the story. Mention which character you liked the best in the story and why.

The teacher should choose some stories for presentation to the class so that the students can learn from each other and share the enjoyment of collective memories and interaction. Also it gives students an opportunity to gain an understanding of other families, cultures and communities.



Children at play



Children enjoy painting



Children exploring nature

PREPARING FOR A CAREER

It has been mentioned earlier that since children under 6 years of age have particular ways of understanding the world and social relationships, have specific developmental needs, any adult attempting to work with children must be carefully and well trained in the field of early child development and care. We might think here that when young women and men become parents, they are not required to have any training in child care, why should a teacher or a caregiver require any training?

There are several reasons why even parents would also benefit from knowing more about how and why children do the things that they do. Parents would also benefit very much from knowing more about expected differences between children of the same age and also appreciate that there are individual differences. They should realise that there is often no point in competitive comparisons between children and even between siblings. Thus we must understand that ALL adults in contact with children WILL, certainly benefit from a scientific understanding of development and growth leading to realistic expectations and interactions with children.

Training and scientific knowledge of childhood, and developmental changes and challenges is even more critical for those adults who choose early childhood programmes as a career. Early child care professionals are responsible for children other than their own. The activities they perform as child care professionals constitute their work and they receive formal recognition for this. Teachers and caregivers are responsible to children who may not be their biological offspring, to the large group of adults who are family members of the children under their supervision and to the

institution they work for, as well as the larger society. ECCE professionals have to be committed to the children, their well-being and learning, be aware and knowledgeable about their needs and the challenges for providing opportunities for their growth and development.

What is the expectation from an adult teacher/caregiver of young children? During preschool years, a teacher needs to keep all the above points in mind, but there is less of a requirement for supervision of physical care of preschool children, like cleaning, feeding, toilet activity since the child develops the capability to speak, to control his or her bowel and bladder movements, eat independently. A teacher needs to focus more on providing interesting and stimulating opportunities for children to learn new things, experience natural phenomena, provide ample opportunities for a variety of experiences like physical, language, social-emotional and other learning experiences. The focus is on enhancing creative expression and exploration, although these aspects are equally important in the earlier years too.

It is necessary to focus on providing opportunities to young children primarily because they have a greater requirement for adult guidance. If we want to express ourselves creatively as adults, we are quite capable of arranging the necessary conditions for this. If we want to talk to someone, we can take the initiative to do so. Children during pre-school years need the support of adults for such tasks. Lev Vygotsky, a psychologist and educator, had outlined the great need that children have for a concerned, caring and knowledgeable adult. The pre-school educator must have knowledge specifically about the child's capabilities, more than information about the world. By knowing how much a child actually knows and is capable of knowing, an adult can help to provide the optimal environment wherein learning is easy, enjoyable and meaningful. The tasks given to a child should be neither too easy nor too difficult; otherwise a child will either lose interest and/or motivation to engage in the activity.

Some of the skills an early childhood professional needs to have are:

- An interest in children and their development
- Knowledge about the needs and capabilities of young children
- Capacity and motivation for interacting with children
- Skills for creative and interesting activities with children in all areas of development
- Enthusiasm for activities like story-telling, exploration, nature and social interaction
- Willingness and interest in answering children's queries
- Capacity for understanding individual differences

- Be energetic and prepared for physical activity for considerably long periods of time

Further, in order to prepare for a career in this field, it is essential to have studied about children's development and basic principles of care. For this you will be required to have an undergraduate degree in a subject that has child/human development and/or child psychology as part of the course. However, if there is a desire to enter into the field soon after completion of schooling, there is also the option of one year diploma or Open University educational courses in the field. Nursery Teacher Training is another course that offers training in this field.

In addition to the courses that one can attend, and degrees that can be acquired, it is also important to remember that having a predisposition to be open and interactive with children is a fundamental requirement if one wants to become an effective early childhood specialist. The person should also be aware of the community and culture so that the pre-school activities are in the context of the culture and regional environment in which the child is growing up. The teacher also needs to be capable of administrative and management skills that are required for record keeping, accounting, report-writing so that the institution maintains proper records, and the contact and interaction with the parent community is effective and productive.

It is also extremely helpful for a teacher to be equipped with a good repertoire of skills in the arts. The skills of story-telling, dance, music, voice modulation, of organising playful outdoor and indoor activities are mandatory when working with children. The training courses will offer several such sessions for the trainees but it is also important for a person to be deeply engaged with and willing to interact with children in several different ways.

Young children have a short attention span when compared with older children and adults. Hence, it is not only important to be prepared with several activities, it is also essential to be adaptive and flexible with children, rather than focussed on completing one's own plan of action. A pre-school teacher has often to quickly change her lesson plan, her strategies and techniques to deal with the needs of young children so that s/he can be an effective teacher. For this, good preparation of a large repertoire of activities and skills is essential before entering the career with children.

SCOPE

The scope of early childhood care and education is very widespread. A person who is trained as an educator or caregiver for young children can

either work as teacher in a nursery school, a caregiver in a crèche or as a member of a team of people working for programmes with young children. Additionally, several governmental and non-governmental organisations hire professionals for planning and promoting campaigns or services for young children. A person can also set up his or her own child care and education-related programme as an entrepreneur, which would mean setting up one's own programme, either at home or in a separate space. Such an enterprise would require the expertise related to organisation and management of such institutions over and beyond the training as a child care worker and educator. Depending on your qualification and interest, you can also find a job as coordinator of a programme run by someone else or as a trainer of teachers in the same subject. If you wish to pursue higher studies, you can enrol in a post-graduate diploma or degree in early childhood education and go on to a doctoral degree in the field which will equip you to do further research in the field and also take on other more senior activities as a professional in the field.

Some of the commonly available services in this field are:

- Crèches
- Day care centres
- Nursery schools
- NGOs
- ICDS
- Training institutes

CAREERS

- Teacher in Nursery schools
- Caregiver in day care centres and crèches
- Team members for programmes for young children
- Professionals to plan and promote campaigns or services for young children organised by Governments or NGOs
- Entrepreneur in child related activities: Camps, edu-picnics, activity clubs, preschool education centres
- Higher studies: a post-graduate diploma or degree in early childhood education, later doctoral degrees with research in the field.

ACTIVITY 3

Name the different types of child care services available in your neighbourhood.

KEY TERMS

ECCE, Child care, Preschool education, Caregiver, Day Care, Crèche

REVIEW QUESTIONS:

1. What do you understand by the term early childhood care and education?
2. What are the different care arrangements young children may require?
3. What are some of the reasons why young children need a special informal programme before formal schooling?
4. What is meant by a child-centred approach?
5. What is a crèche, and what services does this centre provide?
6. List the skills an ECCE worker must have.
7. Describe how we can prepare for a career in ECCE.

PRACTICAL 1

Theme: Activities for preschool children

- Tasks:**
1. Visit to playground or outside open area
 2. Collection of play material

Purpose: This practical is intended to prepare the student for planning and preparing materials for the activities with young children. A specific emphasis is placed on using locally available low-cost or no-cost material.

Conducting the Practical

1. Divide the class into groups of 5 students each. Together, take a walk around the playground in your school or any open area outside the school.
2. Look around; collect any materials that you think would be clean, safe and appropriate for play with young children. Some suggestions are: rocks, stones, pebbles, flowers, leaves, sticks.
3. Once you have collected the material be sure to clean it properly so that it can be used with children.
4. Each group should prepare one activity for children using any one or more of the following concepts:
 - Colour
 - Texture
 - Number
 - Shape
 - Type of material
 - Size

Example 1: Taking leaves of different sizes and shapes, arrange the leaves collected into two sets based on size and shape. Try to identify the plants or trees from which these leaves are taken. Taking two sheets of newspaper, paste the leaves in the two sets. Discuss the names of plants/trees from which the leaves are taken. Other suggestions can be to discuss colour of leaves, matching flowers, names of plants.

Example 2: Using the same material, the children (with your guidance) can make a scenery depicting a home, school or forest where some portions can be drawn or painted and some can have materials collected stuck on the paper. The same can also be done on the floor or wall. In case there is any local craft or art that is indigenous to the area in which the children live, care must be taken to link with the folk activity so that children's home environment is also attended to.

Example 3: Children can be made to act like birds, animals and insects around the foliage that has been collected. Discussions can take place

about which animals they have seen that eat foliage. Other characteristics of animals can also be discussed.

These are a few examples: the teacher in a classroom can actually plan many activities around the same play material depending upon what gets the children interested. Story-telling and role play is particularly fascinating for children.

PRACTICAL 2

Theme: Preparation and use of teaching aids, using indigenous and locally available material to communicate socially relevant messages for children, adolescents and adults in the community.

Note for the teacher: Several practicals are being suggested based on the objectives stated in this assignment. You may divide your class into four groups so that of the four practicals being proposed, one group of students conducts one practical. At the end they share their materials and experiences.

Task: Make a puzzle for young children with indigenous material.

Purpose: Providing learning experiences of developing and preparing play material; for example, a puzzle so that young children's development be facilitated.

Conducting the Practical

1. Instruct the students to bring used boxes made of cardboard (*gatta*)/ old notebook's cover.
2. Students are instructed to draw two single identical pictures of any animal e.g., Fish/elephant or locally available food article e.g., mango, banana.
3. Paint the pictures in bright colours.
4. Stick one picture on the inside of the box/cover of the notebook.
5. The other identical picture should be glued on the other cardboard.
6. After the picture dries, cut it into four pieces.
7. Arrange the pieces on the picture stuck on the cardboard box.
8. The puzzle is ready.
9. Puzzles can also be made out of drawings that are taken from the newspaper or magazines. Cut pictures can also be used to make a

scrap book with cut pictures and drawings. Some ideas for scrap books are a collection called my family, or my school, or my neighbourhood, village. Pictures of fruits, animals, household objects, natural things, can be used for several activities like these.

PRACTICAL 3

Theme: Preparation of play materials

Task: Making puppets and masks

Purpose of the Practical: The students have to learn how to make play material for children. Young children enjoy playing with masks and also drawing and creating materials themselves. When such an activity is done with 4–6 year old children, they should be involved in the making of the material. Low cost materials have to be used. Usage of masks and puppets promotes language and socio emotional development.

Conducting the Practical

Collect stiff paper, newspaper, pieces of cloth, thread, leaves and flowers (for colouring the paper). Take a piece of paper and then do as instructed below:-

1. Draw a face on it the size of a 10-year-old child's face. Draw an outline of a mask in the image of a sun, flower or any animal.
2. Draw a small face and join to it pieces of cloth as arms, legs and hair.
3. Using the prepared puppets and masks, tell a story or do a role-play as an interactive activity.
4. Analyse what children can learn through such an activity.

Note for the teacher: Supervise the making of masks with or without children and guide the discussion about learning outcomes.



GUIDANCE AND COUNSELLING

LEARNING OBJECTIVES

After completing this section the learner will be able to:

- understand the significance and scope of guidance and counselling
 - explain the basic concepts in guidance and counselling
 - have basic understanding and knowledge required for guidance and counselling as a profession.
-

SIGNIFICANCE

Every human being comes across challenges and stress that must be faced. Sometimes, we feel the need for assistance and support to manage the problems and find solutions. Traditionally, in India, such support was readily and easily available through the family, particularly the joint or extended family, and the strong social network. Besides these, moral and emotional support was also available from teachers, friends and spiritual/religious mentors. In the present, particularly urban, context there is an increasing speed in the pace of life, fragmentation of family and socio-religious support systems, and competitiveness. All such factors have led to a greater need for assistance to help individuals cope with their problems. Consequently, the field of guidance and counselling has evolved into a professional area.

You may reflect that when you last experienced a problem, if you were able to speak about it with someone whom you trusted, you felt better. The person whom you confided in may have suggested certain steps to handle the problem, which you may not have thought of. Sometimes the listener is able to guide you to look inwards and find solutions. In this manner, sharing one's troubles with a trusted person can help the individual feel more capable of facing a situation. This is because seeking guidance from others enables a person to examine the situation from various perspectives and find appropriate solutions.

You may have seen or heard of people facing different types of challenging situations. A friend may be upset with her poor grades in examinations, a youth may be disturbed because his parents often quarrel with each other, another person may be having difficulty with friends, some one else may have financial problems. Many students on the threshold of college may be confused about choices to be made for further studies and such other issues. They are perhaps in situations which they are unable to deal with by themselves. Here they would benefit from professional guidance and counselling. These are processes that help people when they feel that they are in a challenging situation and cannot find a way to cope with it.

Sandeep has appeared for the medical entrance examinations for the last two years. He feels that if he doesn't become a doctor, life isn't worth living. He has an artistic bent of mind, can paint very well and is very creative. He could do well in a field which involves creative and artistic/aesthetic activity. But in the medical exams he faces repeated failure, experiences lack of confidence and a feeling of inferiority.

Radha is a resident of a village. Despite the larger family's disapproval, her father sent her for senior secondary schooling to an adjacent village. The young man to whom she is engaged has a shop in the village. He often comes to visit her. Of late he has been insisting that she goes out with him to a park. Radha is in two minds. She likes the young man but is afraid of what people would say. Her mind is in turmoil and there is no one to whom she can turn for advice.

The above two instances depict the kind of challenges that young people may face. In a survey conducted by the All India Educational and Vocational Guidance Association for assessing college students' needs, major problems reported by 50 per cent of the respondents were:

- gap between expectations and performance,
- lack of knowledge regarding careers and professions,
- anxiety regarding the future,
- lack of concentration,
- inability to make friends or deal with members of the opposite sex,
- lack of knowledge regarding sexual matters,
- lack of information regarding one's strengths and weakness,
- lack of knowledge regarding one's aptitude and abilities,
- lack of resources,
- lack of knowledge of effective learning strategies,
- inability to forgive oneself for past mistakes.

The findings clearly indicate the need for professionals in the field of guidance and counselling.

ACTIVITY 1

Make a list of problems you have faced recently, where you would have felt much better after speaking with somebody about it. From the list, categorise the problems in following categories. Personal/ Social/ Academic, You need not disclose or share the problems with others if you do not wish to.

Note to the teacher: Please ensure that students do not feel compelled to share intimate difficulties, other wise it can create more problems for students among the peer group.

Let us examine the duties and roles of professionals in Guidance and Counselling.

BASIC CONCEPTS

Guidance can be explained as assistance made available by competent counsellors to an individual of any group to help him/her direct the life course, develop a point of view, make decisions and be better adjusted. Guidance does not mean giving directions, nor is it an imposition of one's point of view on another person. The person, who is guiding another does not take the onus (responsibility) of making decisions on behalf of the client. We can see that guidance is more about assisting people to find their way rather than giving instructions or ready made solutions.

Counselling is an interactive learning process in which the counsellor (sometimes termed therapist), helps the counselees (those seeking help) to understand the cause(s) of difficulties and guides them to sort out issues and reach decisions. The approach in counselling is holistic, addressing social, cultural, economic and emotional issues. Counselling can be sought at any time in life, although many people reach out only in times of change or crisis. The qualified professional counsellor speaks with the counsellee in a way to help that person solve a problem or helps to create conditions that will cause the person to understand and improve life circumstances.

Counselling may be concerned with addressing and resolving specific problems, making decisions, coping with crisis, improving relationships and developing personal awareness. It also involves working with feelings, thoughts, perceptions and conflicts. The overall aim is to provide counselees with opportunities to work in positive ways so as to live with essence of well being as individuals and as members of the larger society.

ACTIVITY 2

Refer Boxes given on page 157 where the two young persons' problems are described.

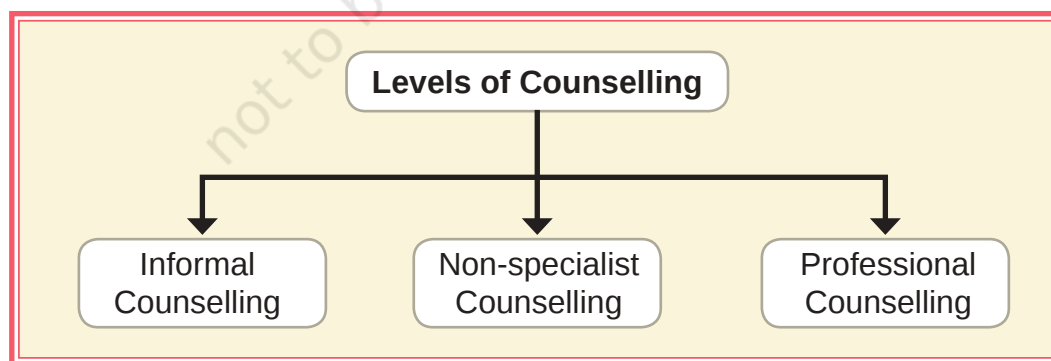
Discuss with your classmates the nature of their problems. Enumerate the solutions that you think would be best for them.

Counselling is a process involving responsibility and confidentiality. Therefore, guidance and counselling experts have to follow certain ethical principles. Counsellors must:

- Act with care and respect for individual and cultural differences and the diversity of human experiences,
- Must never take any step which is likely to harm the counsellee in any way,
- Respect the confidence with which the counsellee places trust in them by not talking about their issues with other people,
- Encourage the counsellee to increase self understanding,
- Help the counsellee to increase and discover a range of choices and alternatives for handling the crisis situations effectively
- Practice within the scope of their competence and refer cases that may need more intensive therapy to experts who are trained to deal with these
- Be aware of all the services available for people in difficult circumstances so that adequate guidance can be provided in case further referral is required.

Levels of Counselling: In day-to-day life you may have noticed that the term counselling is being used informally to refer to any kind of information-seeking interaction including appraisal of a person for careers. It may be useful to understand that there are different levels of counselling as shown in the box given below.

Informal Counselling: It is generally rendered by a person who may be approachable and understanding, but may not be professionally qualified. This empathetic person could be an aunt, uncle, friend or colleague.



Non Specialist Counselling: It is the help provided by specialists of other areas like teachers, doctors, lawyers, religious preachers who, along with their respective specialisation, also wish to handle psychological problems. They try to provide alternative ways of dealing with the problems of people they come across in their daily interactions at work.

Professional Counselling: Professional counsellors are the ones who have received special training in counselling and have the required

qualifications. These counsellors deal with the person's social, emotional and personal problems. In the counselling process, the professional counsellor may use different techniques. Let us briefly discuss three techniques.

How the counsellor deals with the counsellee is based on the mode of approach and the techniques the counsellor uses. These are divided into:

- *Directive, counsellor-centred counselling:* Here the counsellor plays a major role and does all that is possible to get the counsellee to make decisions in keeping with diagnosis of the problem.
- *Non-Directive or permissive or client-centred counselling:* Here the counsellor's role is comparatively passive. The counsellee takes an active part in the process of therapy. The person seeking help is encouraged to gain insight into the problem with the help of the counsellor. The counsellee takes the final decisions. Thus, this counselling process turns out to be a growth experience for the person.
- *Eclectic counselling:* Counsellors who advocate using this type of counselling are of the view that directed or non-directed counselling are at two ends of continuum. And counsellors should incorporate suitable techniques from both the types of counselling mentioned above as and when required, depending on the situation, the problem and the temperament of the client.

PREPARING FOR A CAREER

If you recall the times when you received help and guidance you may have noticed that the listeners, whether they were teachers, friends or another adult, had certain qualities in them that made you approach them easily.

Qualities of counsellor:

1. Sensitive to human problems
2. Empathy
3. Respect for individual variations
4. Being non-judgemental
5. Maintain confidentiality
6. Being approachable
7. Being firm yet friendly
8. Pleasant disposition
9. Understanding values and relationships

These qualities have to be combined with specific skills that the profession demands. These are listening skills, analytical skills and good observation skills. A counsellor must possess the skill of working with individuals as well as groups.

The fact that counselling is basically meant for people with some sort of difficulty, makes it essential for the counsellor to have a disposition as well as empathy towards people apart from being professionally qualified.

Having these qualities alone is not sufficient to become a professional counsellor. One must undergo special training to acquire the necessary skills. Professional counsellors usually hold a masters' degree in Human Development or Child Development/ Psychology of Education, along with at least a post graduate diploma/degree in Counselling. During the course, the trainees receive supervised practical training under trained Psychologists or Counsellors as practical training is essential for developing the skills of a counsellor. In India many reputed Universities and Institutes offer these diplomas. After M.A. or M.Sc. one could also undertake further research and obtain a Ph.D. degree. Professional counsellors hold a certificate and are registered with a professional body which grants licences for practising.

ACTIVITY 3

Match the phrases in column B with counsellors, qualities in column A and enter the correct combination in column C

A	B	C
1. Sensitivity to human problems	a. I agree with you, but please do not hit your child again.	4b
2. Empathy (ability to empathise)	b. Just because he is poor it does not mean Ravi would have stolen the money.	
3. Respect for individual variations	c. It is normal of people to have personal problems.	
4. Being non-judgemental	d. She seems to be cheating on her parents but I must keep it to myself.	
5. Maintaining confidentiality	e. When I heard her story my eyes filled with tears.	
6. Being approachable	f. Hello, how are you? Would you like to talk to me about something?	
7. Being firm yet friendly	g. Different people respond differently to similar problems in their life.	

SCOPE

In your Class XI textbook of HEFS you had studied about life span development. You must have noticed how at each stage there are challenges that an individual must meet and resolve. Each stage of development has specific characteristics as well as certain developmental tasks to be achieved. Assistance and guidance can be a requirement at any stage. For this purpose, it is required for counsellors to be specially trained in the developmental needs and characteristics of individuals at a particular age.

CAREER AVENUES

Career Counsellors: Some counsellors work with people of all ages for vocational and career counselling.

School Counsellors: Schooling can also bring about adjustment problems for children. A child may have problems with academic achievement, with peers or with parents. Counsellors who deal with such difficulties are called school counsellors.

Family Counsellors: They are specialists who work with parents, children and other family members. They deal with specific issues that arise due to conflicts between family members or between generations. They also deal with behaviour problems of individual family members.

Marriage Counsellors: They deal with different issues or problems related to marriage, counselling for marital and before marriage issues, or for personal compatibility, close relationships and counselling for couples.

Life Skills Trainer: These days many people may need assistance in the course of everyday life on account of stress at home or the workplace. For instance, a well adjusted young person may want to become proactive to optimise his or her potential.

Counsellors for Child Guidance: Some counsellors work with children and are called child guidance counsellors.

KEY TERMS

Guidance, counselling, counsellee, counsellor, stress, coping strategies.

REVIEW QUESTIONS

1. What do you understand by the term guidance and counselling?
2. What are some of the important principles of counselling?
3. What are some of the common difficulties that students of your age can have that may require counselling?
4. What are the different types of counselling?
5. How can one prepare for a career in guidance and counselling?

PRACTICAL 1

Theme: Conducting mock sessions in Guidance and Counselling

- Tasks:**
1. Preparing students for role play
 2. Role-play as counsellor and counsellee
 3. Discussion of qualities of counsellor

Purpose: You have learnt about principles of guidance and counselling in this chapter. This practical will give you the experience of being in the seat of a counsellor and the person who receives assistance (counsellee).

Conducting the Practical

Students should form pairs and take the role of either a counsellee or a counsellor after selecting any one issue. They should enact a mock (imaginary) session while teacher and other classmates are observing. The session should be discussed keeping in mind what you have learnt about qualities of a counsellor.

- (a) Career Guidance: A Class X boy wants to take commerce stream but his parents insist on his taking up the science stream. The student has come for help from you.
- (b) Nutrition Counselling: Parents complain to you that their 5-year-old child does not eat anything other than maggi noodles.
- (c) Personal Counselling: A 14 year old comes for help saying he/she is unable to make friends.



SPECIAL EDUCATION AND SUPPORT SERVICES

LEARNING OBJECTIVES

After completing this section the learner will be able to:

- explain the concepts of special education, inclusive education and support services.
 - describe the concept of disability and different types of disability in children.
 - explain the knowledge and skills required for a career in Special Education and allied support services.
-

SIGNIFICANCE

The term education is familiar to all of us. But, 'special education' may be a new expression for some of you. It is a term that refers to educational provisions for children with **special needs**, emerging due to physical, mental and emotional challenges. Therefore, they have Special Educational Needs (SEN). Thus Special Education means specially designed instruction for children with above mentioned challenges in all settings such as classroom, home, workplace, public places, the street and the rehabilitation homes, etc.

There are children who may have unusual difficulty in walking, playing, talking, seeing and hearing, in interacting socially or in doing what one may consider usual. They are likely to have disabilities due to certain conditions

such as hearing impairment, visual impairment or intellectual impairment (a more detailed discussion about types of disabilities follows later). In order to learn, work and experience the world optimally, they have to try harder and people around them have to enable them in their endeavour.

ACTIVITY 1

Can you think of a child who has any of the above listed difficulties? If not, ask a member of your family or a neighbour if she/he knows one such child. Try to meet, observe and interact with any such child/person(s). Write down a few lines about experiences and special needs of the child. Find out if she/he goes to school. If yes, which school, if no, why not?

Children's Special Educational Needs (SEN) are met through certain methodologies of special education. Special education is not segregated or *exclusive education* of students with disabilities. It is an approach that facilitates their learning and allows them to participate in different activities that they may not have had access to on account of their inability to go to school. Hence, children with special needs do not have to always study in a separate institution. In fact, most of them can learn quite well in general classes of a school. However, some children who have severe difficulties, due to the nature of their disability, may benefit greatly from being educated in a classroom prepared exclusively for them, as a smaller number of students are grouped together, where the educator interacts with the students on a one-to-one basis. The educators/teachers who provide special education are called Special Educators.

When children/ students with SEN study in general classrooms with their peers, the arrangement is called '*inclusive education*'. As the term indicates, the philosophy that guides this approach is that students with diverse needs (educational, physical, social and emotional) are placed together in age-appropriate classes/groups such that the students can optimally achieve their learning potential. The school makes suitable adjustments and modifications in its curriculum, teaching methods and physical set up to facilitate their education.

A person who chooses to become a special educator is said to have a career in Special Education. There are several models of special/inclusive education in which a special educator can work with children with SEN:

- (i) Some schools impart education exclusively to children with disabilities. Most such schools offer services to children with specific disabilities, such as those with intellectual impairment, cerebral palsy or visual impairment. These fall in the category of

special schools/programmes and require the services of special educators who are trained in working with children with those specific disabilities.

- (ii) **Inclusive Education** means including children with disabilities in regular classrooms. It is about all children learning together even if they differ from each other in style and pace of learning. It benefits all students and is an education for all. An inclusive school has within its premises, facilities for children with SEN. Here, all the students are placed in regular classes. In such a system, the special educators would not directly teach children with SEN, but provide pedagogical (instructional) support to the regular teachers.
- (iii) **Integrated Education** emphasises placement of children with disability in mainstream school. The school system remains rigid, as a result, very few children with disability are able to cope up with the demands of the school. There are many general schools which are inclusive. This means, the students with SEN are a part of the regular classes. The special educator then co-ordinates work with the regular teachers and provides extra inputs to the students in a Resource Room of the school.

For special and inclusive education to be effective, certain support services should be available to the children as well as to the educators and children's parents. These may be located within the school or in the community, accessible to the family. These are:

- i) Resource materials for students with SEN and educators
- ii) Transportation for students
- iii) Speech therapy
- iv) Physical and occupational therapy
- v) Counselling for children, parents and educators
- vi) Medical services.

In order to specialise in the fields listed from (iii) to (vi), higher education qualifications and training are to be acquired.

BASIC CONCEPTS

In Part II of the Class XI HEFS textbook, in the chapter 'Care and Education' you had read that our school system is not quite equipped to provide education to children with disabilities. One of the primary reasons is that during their training, the general education teachers may have not been oriented adequately to special methods that are required to work with students who have different kinds of needs. In an inclusive classroom, all

teachers have to be sensitive to students with SEN. For example, when a child has intellectual disability, the educator must know how to break up the lesson into interesting and small units and to work slowly and patiently with the child. Slightly different skills are required to teach a child with deafness or one with blindness. While all teachers can acquire some of the skills, special educators receive specific training in such methods.

It must be quite clear by now that special education methods help children with disabilities acquire as much knowledge as they can so that their growth and development are supported to their full potential. The term '**disability**' has been used in the text several times so far. Let us discuss what we mean by disability and the different types of impairments that affect children's development.

Disability: According to the World Health Organisation (WHO), 'disability' is an umbrella term that covers impairments, limitations in activity and restrictions in participation. Some children are born with a physical, sensory or mental impairment. Some others may develop a disability, as they grow, that substantially limits them in their daily life activities. In academic terms they are referred to as children with 'disability'. In the public domain they are sometimes referred to as being 'challenged' or 'differently abled'.

Classification of disabilities: Most of the disabilities can be classified under the following heads:

- i) Intellectual impairment (limitation in intellectual functioning and adaptive skills)
- ii) Visual impairment (includes low vision and total blindness)
- iii) Hearing impairment (includes partial hearing loss and deafness)
- iv) Cerebral Palsy (difficulties of movement, posture, speech and hand functions etc. due to brain damage)
- v) Autism (a disability affecting communication, social interaction and play behaviour)
- vi) Locomotor disability (difficulties in locomotion due to damage to bones, joints and muscles)
- vii) Learning disabilities (difficulties in reading, writing and arithmetic)

ACTIVITY 2

Divide the class into groups of 5–6 students. Discuss with one another in the group and make a list of the terms/words you have heard when referring to a child/adult who has a disability. Reflect and see if any of them have negative meanings.

Causes of disabilities: Briefly, the causes can be grouped under three categories:

- i) Factors that affect before birth, both genetic and non-genetic,
- ii) Factors that affect the child at birth or soon after birth, and
- iii) Factors that impinge on the child during the development period.

Special Education Methods

There are specific methods and procedures in special education that enable the special educator to teach children with SEN systematically. A gist of these is given herein, in order of their implementation.

- i) First, an assessment of the child's/student's level in different areas of development and learning is undertaken. For example, in areas of cognitive development (e.g., concepts in maths), language development or social skills.
- ii) Based on the assessment report, an Individualised Education Programme (IEP) is developed for each student that is used to guide work with the student.
- iii) Regular evaluation of the IEP is undertaken to determine whether learning and development goals are being met, and to check the student's progress.
- iv) All along, access and use of support services (e.g., speech therapy, counselling) are facilitated, so that special education has the desirable effect on the student.

KNOWLEDGE AND SKILLS

It is important for a person interested in following this profession to have an aptitude for it and the willingness to learn. Let us see what kind of knowledge and skills are required of personnel in special education.

Understanding one's own beliefs and attitudes to disability: Most of us 'construct' our beliefs about social phenomena, such as gender and social class, based on our own experiences as well as the beliefs of others significant people who influence us, such as our parents. Hence, it is important to reflect and become aware how one views children with

disability. Does one have a stereotyped view that they are less able and hence not qualified for equal rights? If we understand our own prejudices, it becomes easier to modify them and develop positive attitudes.

Training in special education helps in understanding children's needs, overcoming the prevailing myths and social stigmas related to their disabilities and developing positive attitudes towards them.

- (i) *Developing sensitivity:* If an overweight person is always referred to by others as 'fat', the remark would fall in the category of being insensitive, as he/she feels hurt. It labels him/her in an unfair manner. Special educators are expected to develop sensitivity towards children with disabilities. They can do this by using terms and language that convey respect for them as children first, working with them with the belief that they can learn and grow like all children and communicating hope to them and their parents. An attitude of disregard or mere sympathy and charity towards persons with disability conveys insensitivity and lack of respect for them.
- (ii) *Knowledge about disabilities:* Since the special educators' focus in their work is children with SEN, they must have a thorough knowledge about the nature of different disabilities, the developmental characteristics of children with these disabilities, and what associated difficulties or disorders may be present that need attention. For example, a child with cerebral palsy may also have some degree of intellectual impairment, and yet may be capable of doing many things.
- (iii) *Interpersonal skills:* People who are good communicators make effective special educators. However, with training, one can acquire communication skills as these would be required to work with children individually, as well as in groups. Quite often parents and other members of the child's family require guidance and counselling, where interpersonal skills would be very useful.
- (iv) *Pedagogical skills:* The special educator would be required to know the art and science of teaching students, termed *pedagogy*. This means to be able to teach a particular subject such as science, social science or maths. The educator must know how to break up and simplify the concepts and lessons so that the learners can grasp the principles as well as the meaning.

ACTIVITY 3

Check your level of sensitivity towards children with special needs:

Place a tick mark in one of the two columns.

	Yes	No
1. When I see a child with blindness I feel I am lucky.		
2. I stay away from students who seem to have a disability.		
3. Children who are deaf cannot learn to communicate.		
4. I like to know more about children with special needs.		
5. SEN children should study with non-disabled students.		
6. I am open to sitting in class with peers with SEN.		

How have you fared?

A 'YES' to any of the statements 1, 2, 3 means you have to develop more sensitivity.

A 'YES' to the statements 4, 5, 6 means you are quite sensitive.

Preparing for a Career in Special Education

The need for special educators and other personnel in education programmes, both in special and inclusive education settings, has been increasing over time, more so after the Persons with Disabilities (PWD) Act 1995 was passed. This Act was replaced by the Rights of Persons with Disabilities Act (RPD Act) in 2016 which addresses 21 disabilities. Sarva Shiksha Abhiyan (SSA) has provision for eight years of education for all children, including those with disabilities.

In view of the demand for such specialised personnel in large numbers, a career in Special Education appears to be attractive. In India, all forms of training for professionals and personnel who work in areas related to disability are regulated by the Rehabilitation Council of India (RCI). This autonomous body facilitates special education training through several approved institutions throughout the country in packages of

certificate, diploma and degree level courses. Thus it is possible to be in the field of special education with different levels of training. Some of the current courses and pre-service trainings are:

- i) Certificate course in 'Early Childhood Special Education Enabling Inclusion' from Indira Gandhi National Open University (IGNOU), which qualifies the candidate to be an early childhood special/inclusive educator. The minimum qualification for undertaking this course is Class X. Those with a higher qualification are also eligible.
- ii) Bachelor's degree in special education after any graduate degree qualifies a candidate to be an educator in a special/inclusive school. Such a degree is offered at conventional universities and education universities such as IGNOU, as well as by the National Institute for Empowerment of Persons with Intellectual Disabilities. There are National Institutes for the Hearing Impaired, the visually impaired and the Physically disabled run by the Government.
- iii) Those who have a Master's degree in fields such as Child Development, Human Development, Psychology or Social Work, can enter special education by doing any of the RCI recognised certificate, diploma or degree courses which may have an entry qualification lower than postgraduation. These provide recognition as special educators.
- iv) A Master's degree in Disability Studies prepares one for a larger role in the field of disability such as teaching at the university level, research, planning of programmes and setting up one's own organisation.
- v) Many departments of Child Development or Human Development, under the faculties of Home Science at various universities offer courses related to childhood disability. Postgraduate studies that include the study of children with disabilities in theory and practicum prepare the students quite adequately to work in educational institutions in various capacities.

SCOPE

Depending upon which courses related to special education one studies, and up to what level one undertakes higher education, the field has immense potential. From becoming an early childhood special educator after Class X to being able to organise and conduct one's own enterprise are the possibilities. With a few years' experience, it is possible to be selected as head of special education programmes at schools, or manager of special schools. Non-governmental organisations that follow SSA guidelines too need qualified special educators and master trainers.

KEY TERMS

Special education, special educator, disability, exclusive education, inclusive education, sensitivity.

REVIEW QUESTIONS

1. What do you understand by the term 'special education'? Why is a teacher referred to as a 'special educator'?
2. How will you explain the term 'inclusive' education'?
3. Describe the different models of Special and Inclusive education.
4. Name the support services that enable quality special education of children.
5. Define the term 'disability'. How are childhood disabilities classified?
6. What type of knowledge and skills are required to be a special educator?
7. If someone needs guidance on entering the field of special education, what would be your advice?



MANAGEMENT OF SUPPORT SERVICES, INSTITUTIONS AND PROGRAMMES FOR CHILDREN, YOUTH AND ELDERLY

LEARNING OBJECTIVES

After completing this section the learner will be able to:

- explain why services, institutions and programmes are needed for children, youth and elderly
 - describe the aspects involved in management of institutions and programmes
 - discuss the knowledge base and skills set required to manage and run institutions and programmes
 - become aware of the career opportunities available in this field.
-

SIGNIFICANCE

Family is the basic unit of the society and one of its chief functions is to look after the needs of its members. The members in a family could include parents, their children of various ages and the grandparents. The composition of the family will vary from one household to another but at

different stages in its life cycle, the family has different composition and the members together try to meet each others' needs. However, a family cannot always provide all the specialised services that are needed for the optimal growth and development of its members. For example, young children need formal education; all the members need health care. Therefore, each community creates other structures like schools, hospitals, universities, recreation centres, training centres which provide specialised services or support services which can be accessed by different members of the family to meet their needs.

Generally a family, along with other structures of the society like schools, hospitals etc., is expected to meet the needs of its members. However many families in our country are unable to meet even the basic needs of their members and/or access as well as utilise the various services provided by other structures of the society due to various reasons, one of them being lack of resources, especially financial. See the box given below for some pertinent details in this regard. Further, many children, youth and elderly are separated from their families and are left to cope on their own. By themselves, they find it difficult to meet their own needs.

- Poverty in India is widespread, with the nation estimated to have a third of the world's poor.
- According to the Planning Commission of India, in 2011–2012, 29.5 per cent of the population was living below the national poverty line.
- Less than 30 per cent of our population has access to adequate sanitation facilities.
- Less than half of all deliveries in a year are conducted by trained birth attendants, which is a cause of high maternal and infant mortality and morbidity.
- Less than half the country's households consume iodised salt. Lack of iodine adversely affects mental and physical growth of the child.
- Pervasive discrimination against girls and women, which is reflected in a range of adverse indicators, including nutritional and educational outcomes, and the declining ratio of girls to boys, particularly in the youngest age group, are matters of concern.

For such families, or the members who are in challenging and difficult circumstances, the state/society has to step in and make efforts to look after the needs of its members. This is because it is the responsibility of the government and society to ensure that all citizens have a decent life, and children and youth have opportunities for holistic development in a healthy and stimulating environment. One of the ways in which the government responds to the needs of those who are in difficult circumstances, is by setting up institutions and initiating programmes dedicated to the children, youth and the elderly. It also provides support to the efforts of the private sector and/or the NGO sector. Some of these institutions and programmes may focus on meeting specific needs while some programmes adopt a holistic perspective and provide intervention and services to meet various needs of the individuals together. The latter approach stems from the philosophy that all the needs of the individual must be met together to have optimal impact.

BASIC CONCEPTS

Why are we focussing more on children, youth and elderly? This is because these are 'vulnerable' groups in our society. What do we mean by 'vulnerable'? The word 'vulnerable' refers to those persons / groups in a society, who are more likely to be affected by adverse circumstances and on whom adverse circumstances are likely to have a more harmful impact. What makes children, youth and elderly vulnerable? This can be answered by understanding the needs of these groups. If the needs of any individual are not met in the course of daily life, that person becomes vulnerable.

ACTIVITY 1

Form three groups in the class and on the basis of what you learned in Class XI, list the needs of (i) Children, (ii) Youth, (iii) Elderly. Try to list (at least 5-8) of the special characteristic needs for each group. A group leader should then present the list of each group to the rest of the class.

WHY ARE CHILDREN VULNERABLE?

Children are vulnerable because childhood is a period of rapid development in all domains, and development in one area influences development in all

others. In order for the child to grow optimally in all areas, it is important that the child's needs for food, shelter, health care, love, nurturance and stimulation be met in a holistic manner. Adverse experiences can have a lasting impact on the child's development.

All children are vulnerable, but some are more vulnerable than others. These are the children who are living in such challenging conditions and difficult circumstances that their basic needs of food, health, care and nurturance are not met and this prevents them from developing their full potential.

Box given below clearly highlights that the needs of a large proportion of child population are not met.

- Nearly two-thirds of children under five years of age suffer from moderate or severe malnutrition. Malnutrition affects development in all areas.
- About 3 million children live on the streets without any shelter.
- Only one in three children of the pre-school age has the opportunity to be in an early learning programme.
- Less than half of India's children between ages 6 and 14 years go to school.
- A little over one-third of all children who enrol in Standard I reach Standard VIII. The others drop out of school for one or the other reason.
- 17 million children in India work, as per official estimates. The actual numbers may be even more. According to the World Bank the number may be 44 million.

All children in difficult circumstances need care and protection but some may violate the law or be involved in anti-social activities. The Juvenile Justice (Care and Protection of Children) Act, 2000 is the first legal framework for juvenile justice in India. The Act concerns itself with two categories of children: those who are "in conflict with law" and those considered to be "in need of care and protection." Children "in conflict with law" (also called juvenile delinquents) are those who have been caught by the police for violating the Indian penal code. In other words, they are arrested by the police because they have committed/ are accused of a crime. The Act provides for a special approach towards the prevention

and treatment of juvenile delinquency and provides a framework for the protection, treatment and rehabilitation of children. It relates to 'juveniles in conflict with law' and 'children in need of care and protection', by providing for proper care, protection and treatment, by catering to their development needs, and by adopting a child-friendly approach in the adjudication and disposition of matters in the best interest of children and for their ultimate rehabilitation through various institutions. This Act is in compliance with the Child Rights Convention and the identified children in need of care and protection are those:

- who are without any home or settled place or abode or without any means of sustenance. This includes abandoned children, street children, runaway children and missing children;
- who live with a person (guardian or not) who is unfit to exercise control over the child or where there is a chance of the child being killed, abused or neglected by the person;
- who are mentally or physically challenged, ill or suffering from terminal illness or incurable disease and have no one who can support or look after them;
- who are abused, tortured or exploited for purpose of sexual abuse or illegal acts;
- who are vulnerable to being inducted into drug abuse or trafficking;
- who are victims of armed conflict, civil commotion, or natural calamity;
- who are likely to be abused for unconscionable gain. These include abandoned, orphaned, trafficked minors rescued from red-light area, child labourers rescued from factories, lost, runaways, special needs children and children of prisoners.

Institutions, Programmes and Initiatives for Children

There are several programmes and services operating in the country to meet the needs of vulnerable children. Here we shall briefly describe some significant initiatives and efforts in order to acquaint you with the various activities carried out by the government and the non-governmental organisations.

- *Integrated Child Development Services (ICDS)* of the Government of India. It is the world's largest early childhood programme which aims to meet the health, nutrition, stimulation and early learning / education needs of children below six years of age in an integrated manner so as to foster their development. The programme offers

health, nutrition and hygiene education to mothers, non-formal pre-school education to children aged three to six, supplementary feeding for all children below six years and diet for pregnant and nursing mothers, growth monitoring and basic healthcare services such as immunisation and vitamin A supplements. The programme today covers over 41 million children. These services are delivered in an integrated manner at the childcare centre named ‘anganwadi’.

- *SOS Children’s Villages:* This is an independent non-governmental social organisation which has pioneered a family approach to the long term care of orphaned and abandoned children. SOS villages have the vision of providing family-based, long-term care to children who can no longer grow up with their biological families. In each SOS home there is a ‘mother’ who looks after 10-15 children. This unit lives like a family and the children experience relationships and love once again, which helps children to recover from traumatic experiences. They grow up in a stable family environment, and are supported individually until they become independent young adults. The SOS families live together, forming a supportive ‘village’ environment. They are integrated with the local community and contribute to the social life.

In India, the first SOS village was set up in 1964. Now the organisation cares for about 6000 needy/abandoned children in 40 unique villages across the country. Whenever India has experienced unrest or environmental and natural disasters like the toxic gas accident of 1984 in Bhopal, or devastating cyclones, , catastrophic earthquakes as well as Tsunami the SOS Children’s Villages rendered immediate assistance with emergency relief programmes, which were converted into permanent facilities, mostly SOS Children’s Villages.

- *Children’s Homes run by the Government for children from 3–18 years who are in state custody for various reasons.*

There are three kinds of homes for children:

- a) Observation Homes where children stay temporarily till the completion of an investigation to track down their parents and collect information on their family background.

- b) Special Homes where juveniles (children under 18 years of age) found guilty in terms of violation of law, are placed in custodial care.
 - c) Juvenile /Children's Homes where children whose families are not traceable, or are unfit/dead or simply unwilling to take the child back stay. The government is responsible for providing room, board, education, and vocational training. Most of these Homes are run by government in partnership with NGOs. Efforts are made to help the children develop skills which will enable them to become productive members of society.
- *Adoption:* India has a long tradition of child adoption. Earlier adoption was limited within the family and was covered by social and religious practices. But with changing times, adoption beyond the family has been institutionalised and legalised. While the Government of India and State Governments provide necessary support and guidance through policies and programmes, Non-Governmental Organisations (NGOs) provide necessary delivery systems for the process of adoption. In order to strengthen adoption rules and facilitate adoption, the Government of India under the advice of the Supreme Court has constituted a Central Agency, Central Adoption Resource Authority (CARA), to set up guidelines for adoption to safeguard the welfare and rights of children.

WHY ARE YOUTH VULNERABLE?

The National Youth Policy, 2014 defined 'youth' as persons in the age group of 15–29 years. Those between 13 and 19 years are called adolescents. Our national progress depends, crucially, on the ways and means through which youth are encouraged and nurtured as a positive force for national growth and are enabled to contribute to socio-economic development. Youth is a vulnerable period due to many reasons. During this period an individual is trying to come to terms with many biological changes in her/his body which have an impact on the person's sense of well-being and identity. This is also the period when the individual is preparing to take on adult roles, two of the foremost being earning a livelihood and marriage, followed by raising a family.

Peer pressure and pressure to excel in an increasingly competitive world are other factors that can cause a lot of stress and turmoil. When the family/environment is unable to provide positive support to the adolescent, some adolescents may consume alcohol and drugs (also termed substance abuse). Such maladjustive behaviour for combating stress is on the rise. Health is another aspect which is of critical concern. Youth face significant risks related to sexual and reproductive health, and many lack the knowledge and power to make informed sexual and reproductive health choices. Within the broad category 'youth', there are some groups who are especially vulnerable. They are:

- Rural and Tribal Youth;
- Out-of-school Youth;
- Adolescents, particularly female adolescents;
- Youth with disabilities;
- Youth under specially difficult circumstances like victims of trafficking, orphans and street children.

In order to be socially useful and economically productive, youth need appropriate education and training, gainful employment and adequate opportunities for personal development and advancement. They also need requisite shelter and a clean environment, as also basic health services of quality, social defense and protection from all manner of exploitation. Suitable participation in decision-making bodies which are concerned with issues relating to the youth, and with socio-economic and cultural matters, as well as access to sports, physical education, adventure and recreational opportunities are other requisites.

YOUTH PROGRAMMES IN INDIA

The Ministry of Youth Affairs and Sports adopted the National Youth Policy in 2003.

- *The National Service Scheme (NSS)* aims at involving college level students in programmes of social service and national development like construction and repair of roads, school buildings, village ponds, tanks, activities related to environmental and ecological improvement like tree plantation, removal of weeds from lakes, digging pits, activities related to hygiene and sanitation, family welfare, child-care, mass immunisation, vocational training in craft, tailoring, knitting, and organising co-operatives. NSS students also render assistance to local authorities for implementing of various relief and rehabilitation programmes to meet the needs of the economically and socially weaker sections of the community.

- *The National Service Volunteer Scheme* provides opportunities to students (who have completed their first degree) to involve themselves, on a whole-time basis for a short period of one or two years, in programmes of national development mainly through *Nehru Yuva Kendras*. They are involved in programmes of adult education, establishment of youth clubs, organisation of work camps, youth leadership training programmes, vocational training, promotion of rural sports and games, etc. The *Nehru Yuvak Kendras* also aim to enable the non-student youth of the rural areas to contribute to development in the rural areas. Through the various activities the *Kendras* aim to popularise nationally accepted objectives such as self-reliance, secularism, socialism, democracy, national integration and development of scientific temper. Some such activities are non-formal education, social service camps, development of sports activities for young people, cultural and recreational programmes, vocational training, youth leadership training camps and promotion and establishment of youth clubs. These activities are organised for the purpose of helping the non-student youth acquire literacy and numeracy skills for self-reliance, upgrade their functional capabilities, and make them aware of possibilities of their development, thus making the youth functionally efficient, economically productive and socially useful.
- *Promotion of Adventure*: Many youth clubs and voluntary organisations organise activities like mountaineering, trekking, hiking, exploration for collection of data, study of flora and fauna in the mountains, forests, deserts and sea, canoeing, coastal sailing, raft-exhibitions, swimming, cycling, etc., by using the financial assistance provided by the government for promotion of adventure. These activities are aimed at encouraging the spirit of adventure, risk-taking, co-operative team-work, capacity of ready and vital response to challenging situations and endurance among the youth. Government also provides assistance for establishment and development of institutions to facilitate such activities.
- *Scouts and Guides*: The Government provides financial support for training scouts and guides, organising rallies, jamborees, etc. This aims at developing the character of boys and girls to make them good citizens by inculcating in them a spirit of loyalty, patriotism and thoughtfulness for others. It also promotes balanced physical and mental development and inculcates a desire for social service.
- *Commonwealth Youth Programme*: India is participating in the Commonwealth Youth Programme which is aimed at making the youth participate in development processes of their respective countries and to provide a forum for increasing co-operation and understanding among the Commonwealth countries. Under this programme, three

regional centres for advanced studies in youth work have been set up in India, Zambia and Guyana. The Asia Pacific Regional Centre has been set up at Chandigarh, India.

- *Promotion of National Integration:* Financial assistance is given by the Government to many voluntary agencies to organise visits of youth living in one state to another state with marked cultural differences, in order to promote greater understanding of the historical and cultural heritage of the country, of the problems being faced by the people of different regions and environment, social customs etc. in other parts of the country. Camps, seminars, etc. are also organised with the objective of promoting national integration.

WHY ARE THE ELDERLY VULNERABLE?

In a number of countries, a Senior Citizen is a person in the age group 65 years and above. However, in India Senior Citizens constitute persons in the age group of 60 years and above. There has been a steady rise in the population of older persons in India, since life expectancy, which was approximately 29 years in 1947, has increased to 69.3 years in 2009–13 for females and 65.8 years for males. India is home to the second largest number of Senior Citizens in the world after China. The number of elderly will account for nearly 9 per cent of the population in 2016. (Source: Human Development Report).

The special features of the elderly population in India are:

- Majority (80%) of them are in the rural areas, thus making service delivery a challenge
- Feminisation of the elderly population
- Increase in the number of the older-old (persons above 80 years)
- A large percentage (30%) of the Senior Citizens is below the poverty line.

The elderly are a vulnerable group due to various reasons. Firstly, health is a major concern for many individuals at this age. The elderly are more vulnerable to disease because of decreased physiological reserves and defence mechanisms. Besides illness, the aging process itself leads to certain disabilities such as low vision and blindness resulting from cataracts, deafness resulting from nerve impairment, loss of mobility from arthritis and a general inability to care for oneself.

Secondly, in the family life cycle for many, this may be a period when they find themselves alone because the children are likely to have moved away from the family either because of marriage or to earn a living.

Many may experience feelings of loneliness, isolation and a sense of being a burden on others. Many individuals find themselves financially dependent on the younger generation which may add to their feeling of stress. Further, especially in metropolitan cities, there is fragmentation of the traditional family network and the traditional value system is also undergoing change. Certain features of city life (small family size, nuclear families, lack of free time to care for the aged, limited living space, high cost of living, long working hours), lead to reduced support within the immediate and extended family. Sometimes concepts like privacy, space, independence, materialism, focus on self are also responsible for the inability to adequately care for the elderly. Thus many elderly persons are left to fend for themselves at a time when family support is most necessary for them. Ageing has become a major social challenge and it is necessary to provide for the economic and health needs of the elderly and to create a social milieu which is conducive and sensitive to emotional needs of the elderly.

The above description should not make you think that there are only problem and difficulties in old age. Many old people continue to live fulfilling lives. In many families the elderly are well respected and continue to find fulfillment. One positive feature concerning the elderly population is that most 60 or more years old are economically active, presumably because they are engaged in sectors for which there is no specific age of retirement. What is needed is to recognise the elderly as a human resource and their rich experience and residual capacities be put to optimum use for the benefit of national development. Their ability to lead healthy and fruitful lives should be ensured by the Government. The government adopted the National Policy for Older Persons in 1999.

ACTIVITY 3

Divide the class into two groups. Let one group discuss the situation of elderly in their neighbourhood. The other group should discuss how the elderly can contribute to family and society. Let the discussion of each group be presented to the class through a group leader.



SOME PROGRAMMES FOR THE ELDERLY

Government, Non-Government Organisations, Panchayati Raj Institutions, local bodies are implementing different types of programmes for the elderly in India. Some of the programmes operating in the country for the elderly are as follows:

- Programmes catering to the basic needs of Older Persons particularly food, shelter and health care to the destitute elderly;
- Programmes to build and strengthen intergenerational relationships particularly between children/youth and Older Persons;
- Programmes for encouraging Active and Productive Ageing;
- Programmes for providing Institutional as well as Non Institutional Care/Services to Older Persons;
- Research, Advocacy and Awareness building programmes in the field of Ageing;
- *Old Age homes* to provide food, care and shelter;
- *Respite Care Homes and Continuous Care Homes* for Older Persons who live in old age homes but are seriously ill requiring continuous nursing care and respite;

- *Multi-Service Centres for Older Persons* to provide daycare, educational and entertainment opportunities, healthcare, companionship;
- *Mobile Medicare Units* to provide medical care to the older persons living in rural and isolated and backward areas;
- *Day Care Centres for Alzheimer's Disease/Dementia Patients* to provide specialised day-care;
- *Help-lines and Counseling Centres for older persons*;
- *Mental health care and Specialised care for the Older Persons* to provide Mental Health Care Intervention Programmes to the elderly;
- *Disability care and hearing aids for older persons*;
- *Physiotherapy clinics for older persons*;
- *Awareness Generation Programmes for Older Persons and Care Givers* like self-care, preventive health care, disease management, preparation for old age/healthy and productive ageing, intergenerational bonding;
- *Training of Caregivers for older persons*;
- *Sensitising programmes for children, particularly in Schools and Colleges*;
- *National Old Age Pension Scheme (NOAPS)* meant for old persons who are considered destitute i.e., not having any regular means of subsistence on their own or through financial support from family members. Beneficiaries should be above 65 years, need to provide proof of age and their destitute status. The state governments can add to the amount from their own resources.

PREPARING FOR A CAREER

In this career choice, you may either work as in-charge or manager of certain activities in an already functioning programme/institution, or you may choose to initiate set up of an organisation/programme for the youth, children or the elderly. Whatever be the case, it will be a career for which you will be required to develop a broad knowledge base and multiple skills.

Let us first understand what management of institutions and programmes involves. A career in management of institutions and programmes for children, youth and elderly will need honing of the abilities and skills of a planner, manager and an evaluator, may be even an entrepreneur as well as strong knowledge of the needs, characteristics

and modes of care giving for the target group would also be necessary. The following are some skills and abilities you will need to develop:

- *People Skills:* Running or working in an organisation means interacting with people in different roles and from different backgrounds. The following are some groups of people you are likely to interact with:
 - (i) *The Community:* A programme or an institution for children will be successful if the community feels a sense of involvement and ownership with it. This happens when the programme is planned by involving the people for whom it is intended right from the start. Participatory planning, management and implementation are the pillars of effective programmes. Thus, building linkages with the community and invoking community participation will be a major aspect of your work.
 - (ii) *The Private Sector:* The private sector financial institutions, companies and organisations have come in a big way to support innovative programmes and institutions. This is a positive step as it is an opportunity for the private sector to discharge its social responsibilities.
 - (iii) *The Officials in the Government:* You may need to interact with government departments for various purposes, including funding and fulfilling other legal requirements.
 - (iv) *People within the organisation:* For smooth functioning of the organisation, it is important that the people (both beneficiaries and personnel working therein) enjoy a harmonious relationship with each other. Cultivating cordial interpersonal relations is a major factor in the success of an organisation.
- *Administrative Skills:* Running or managing an organisation or programme involves handling finances, recruiting personnel, renting space, buying equipment, maintaining records and stocks. While there may be other specific people dealing with each of these aspects, it would also be necessary and helpful for you to have a basic understanding of the issues involved in each of these.

Some person may even wish to start and establish a new organisation for some specific needy target group. Such enterprising person will need to consider the aspects of appropriate location, who should it cater to suit the target beneficiaries, the services/combination of services to be provided, finances to run the organisation, recruitment of staff with

different skills and knowledge base to handle the various aspects of the programme including handling formalities of registering the organisation, implementing the programme, improving the activities based on periodic evaluation and feedback.

Last but not the least, the person needs to have vision about what he/she wants to achieve, how the organisation will contribute to meeting the needs of the target group. A person with a vision is usually deeply committed to that cause and has a strong passion for work in that area.

The need for programmes and institutions for children, youth and elderly which provide quality services will continue to remain a basic need of civil society. The first step in preparation for this career is to develop a knowledge base and an understanding about children, youth and the elderly. Towards this end, it will be appropriate to obtain an undergraduate degree in Home Science (also known by other names such as Family and Community Sciences) or Social Work or any other social sciences. These degree programmes usually focus on such three vulnerable groups in the population. You can choose to enter the employment market after the undergraduate degree or choose to study further. Along with pursuing a programme of study through the conventional system, you can also explore the opportunities provided by the Open and Distance learning in the country to pursue programmes which will equip you to work with the children, youth and elderly. The Indira Gandhi National Open University offers programmes which may be of interest to you. These programmes can be done along with studying for the regular degree course. Some such courses are

- Certificate Programme in NGO Management
- Diploma in Youth Development Work

There are State Open Universities as well which offer programmes through the distance mode. It will be worthwhile to explore the websites of IGNOU and other State Open Universities for more details.

SCOPE

Depending upon the type of programme you wish to be involved with and your own inclination, the field offers a variety of possibilities. Career avenues are shown in the box.

CAREER AVENUES

- Set up your own institution for services to any target group
- Be a manager in an established institution or a programme
- Be a functionary at any level/cadre
- Be a researcher consulting with / assessing / evaluating existing programmes and institutions.

KEY TERMS

Children, youth, elderly, vulnerable, difficult and challenging circumstances, people skills, administrative skills.

REVIEW QUESTIONS

1. Why are children, youth and elderly vulnerable?
2. What type of programmes are appropriate for youth?
3. What are some of the concerns with respect to the elderly?
4. Describe two programmes each for children, youth and elderly.
5. What advice will you give to someone who is planning to set up her/his own institution for children/youth/elderly?
6. Describe the knowledge and skills you will need in order to pursue a career in management of institutions and programmes for children/youth/elderly.

PRACTICAL 1

Theme: Care and Welfare of the Elderly.

Task: To prepare a script and enact a play about dynamics in a large joint family.

Purpose: In families there are people of all ages. A healthy, happy family is one where the needs and requirements of members of every age-group are fulfilled and each member has an important place in the family. Role-play is a powerful technique to communicate these dynamics.

Conducting the Practical

A group of 5-6 students are selected and assigned roles of different family members: children, parents, grandparents. They are instructed to present a 15-minutes role play for which they have to write a script for the different characters in imaginary situations.

The role-play will be discussed and analysed to evaluate the students' understanding of the role of the elderly and their place in a family.

Note to the teacher

After the role-play presentation, the teachers should guide the discussion with reference to the participation of the elderly in family and society, attitude and behaviour of the younger members and the well being of the family.

PRACTICAL 2

Theme: **Making a small booklet** of four line poems on environment, birds and animals, with illustrations.

Purpose: Providing the students learning experiences of developing and preparing play material, poem booklet, so that young children's language development could be promoted.

Conducting the Practical

1. Students in groups of six will be instructed to choose one theme on which they would write one poem.
2. The theme could be environment, birds, animals, water, nature, etc.
3. Students could collect relevant pictures from magazines/newspapers related to their theme. The students may draw and paint the pictures themselves also if they wish to.
4. From one sheet of chart paper cards of 4" × 6" could be cut. The students could also use old notebooks covers.
5. Use one card for one poem.
6. With the help of glue, stick the relevant picture to the poem/or draw the relevant picture.
7. Write the poem using bold big letters with coloured pen/wax colours.
8. Complete 4-5 cards in similar manner.
9. Make a cover page, writing the title with pictures.
10. Make holes in the cards and tie these cards with an old string. The booklet of poems is ready.

REFERENCES FOR FURTHER READING

- ARYA, S. 1996. *Infant and Child Care*. Vikas Publications. New Delhi.
- DOCTOR NDTV. 2009. *Child Development*. Byword Books. New Delhi.
- DOCTOR NDTV. 2009. *Adolescence*. Byword Books. New Delhi.
- GHOSH, S. 1981. *The Feeding and Care of Infants and Young Children*. Voluntary Health Association of India. New Delhi.
- KAKAR, S. 1981. *The Inner World: The Psychoanalytic Study of Childhood and Society in India*. Oxford Publishers. New Delhi.
- KRISHNAN, L. 1998. *Child Rearing: An Indian Perspective*. In: A. K. SRIVASTAVA (Ed.), *Child Development: An Indian perspective*. pp. 25– 55. National Council for Educational Research and Training. New Delhi.
- SANTROCK, J. W. 2006. *Child Development*. McGraw Hill. New York.
- SHARMA, N. 2009. *Understanding Adolescence*. National Book Trust.
- SWAMINATHAN, M. 1998. *The first five years: A critical perspective on early childhood care and education in India*. Sage Publications. New Delhi.

SYLLABUS

HUMAN ECOLOGY AND FAMILY SCIENCES (CLASSES XI-XII)

RATIONALE

The curriculum in Human Ecology and Family Sciences (HEFS), formerly known as Home Science, has been framed keeping in view the principles of the National Curriculum Framework-2005 of the NCERT. Traditionally, the field of Home Science encompasses five areas, namely, Food and Nutrition, Human Development and Family Studies, Fabric and Apparel, Resource Management and Communication and Extension. All these domains have their specific content and focus that contribute to the study of the individual and the family in Indian socio-cultural context. The new curriculum has attempted to break away from the conventional framework of the discipline in significant ways. In the new conceptualisation the boundaries between different areas of the discipline have been dissolved. This has been done to enable students to develop a holistic understanding of life in the home and society. A special effort has been made to communicate respect for every student's life at home and in society by making the curriculum appropriate for both boys and girls, living in different contexts, including those who are homeless. It has also been ensured that all the units address, in their content, the significant principles of equity, equality and inclusiveness. These include gender sensitivity, respect for diversity and plurality in relation to rural-urban-tribal location, caste, class, value for both traditional and modern influences, concern for society and pride in national symbols. Additionally, the novel approach has made concerted efforts, to integrate learning at school by building bridges with other subjects in the sciences and social sciences.

The practicals have an innovative and contemporary character and reflect the utilisation of new technology and applications that would strengthen critical engagement with the lived realities of people. More specifically, there is a deliberate shift to field-based experiential learning. The practicals are designed to foster critical thinking. Further, conscious effort has been made to move away from stereotyped gender roles, thus

making the experiences more inclusive and meaningful for both boys and girls. It is imperative that the practicals are conducted keeping in mind the resources available with the family and community.

The course adopts a developmental framework in Class XI using the life-span approach, starting with adolescence, the stage of development being experienced by the student. Beginning with one's own stage of development would instill interest and enable identification with the physical and emotional changes that the student is undergoing. Following this is the study of childhood and adulthood. In each unit, the challenges and concerns have been addressed along with the activities and resources necessary to meet these challenges.

For Class XI the 'self and family' and the 'home' are focal points for understanding the dynamics of individual lives and social interaction. The rationale for using this approach is that it will enable the adolescent student to understand herself/himself in the context of the family, which in turn is nested within the wider Indian socio-cultural milieu.

For Class XII, the emphasis is on 'work and careers' through the life-span. In this context, work is perceived as essential human activity that contributes to the development and sustenance of individuals, families and society. Its value is not linked only to its economic ramifications. The student will be helped to explore the significance of work, jobs and careers and their inter relationship. To understand this concept, the student will be imparted life skills and work skills in the respective areas of HEFS. This will facilitate the acquisition of basic skills and orientation to advanced professional skills needed for specialisation in the selected fields discussed in the course. It is significant that these skills will be useful for the student in her/his personal-social life, as well as serve as a springboard for pursuing a career in the future.

OBJECTIVES

The Human Ecology and Family Sciences (HEFS) curriculum has been framed to enable the learners to:

1. Develop an understanding of the self in relation to family and society.
2. Understand one's role and responsibilities as a productive individual and as a member of one's family, community and society.
3. Integrate learning across diverse domains and form linkages with other academic subjects.
4. Develop sensitivity and undertake a critical analysis of issues and concerns of equity and diversity.
5. Appreciate the discipline of HEFS for professional careers.

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NOTES

SYLLABUS - HEFS, CLASSES XI-XII

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CLASS XI

Theory

Total Periods 180

Introduction: Evolution of the discipline and its relevance to the quality of life **2**

Unit I: Understanding oneself: Adolescence **60**

- A. Sense of self-understanding 'Who am I'?
- B. Characteristics and needs
- C. Influences on identity formation
 - Biological and physical changes
 - Socio-cultural contexts
 - Emotional changes
 - Cognitive changes
- D. Food, nutrition, health and fitness
- E. Management of resources - time, money, energy and space
- F. Fabric and apparel
- G. Media and communication technology
- H. Communication skills
- I. Living and working in a global society

Unit II: Understanding family, community and society **50**

- A. Relationships and interactions with 'significant others';
 - Family
 - School - peers and educators
 - Community
 - Society
- B. Concerns and needs in diverse contexts: Family, school, community and society

Key areas:

- a. Health, nutrition and hygiene
- b. Activity, work and environment
- c. Resource availability and management
- d. Learning, education and extension
- e. Textile heritage of India

Unit III: Childhood

30

Survival, growth and development

Nutrition, health and well being

Care and education

Clothes and apparel

Children with special needs

Socio-cultural influences on children

Unit IV: Adulthood

38

- Health and wellness
- Financial planning and management
- Care and maintenance of fabrics and apparel
- Perspectives in communication
- Individual's responsibilities and rights.

PRACTICALS FOR CLASS XI

1. Study of physical self with reference to:
 - a. Age, height, weight, hip size, round chest/bust, round waist
 - b. Age at menarche: girls
 - c. Growth of beard, change in voice: boys
 - d. Colour of hair and eyes
2. Understanding oneself with reference to :
 - a. Developmental norms
 - b. Peers, both male and female
 - c. Health status
 - d. Garment sizing
3.
 - a. Record own diet for a day
 - b. Evaluate qualitatively for adequacy
4.
 - a. Record the fabrics and apparel used in a day
 - b. Categorise them according to functionality
5.
 - a. Record one day's activities relating to time use and work
 - b. Prepare a time plan for oneself.
6.
 - a. Record own emotions for a day in different contexts
 - b. Reflect on the "why" of these emotions and ways of handling them
7. List and discuss five messages from print and electronic media which have influenced own self.

8. Collection of information from different regions in India and critical discussion on:
 - a. Food practices including food taboos, fasting and festivity preparations
 - b. Clothing practices related to rites, rituals and occupation
 - c. Childcare practices in early years – gender similarities and differences
 - d. Traditional forms of communication including festive and special occasions

9. List and discuss 4–5 areas of agreement and disagreement with:
 - a. Mother
 - b. Father
 - c. Siblings
 - d. Friends
 - e. Teacher

How would you resolve the disagreements to reach a state of harmony and mutual acceptance?

10. Documentation of a traditional textile art/craft of neighbouring area.

11. Visit to any one programme/institution (Govt. /NGO) for children; observation of activities in the programme and report writing.

Or

Observation of any two children of different ages in the neighbourhood and reporting on their activities and behaviour.

12. Construction of Quality Of Life (QOL) and Human Development Index (HDI).

13. Relationship of fibre properties to their usage:
 - a. Thermal property and flammability
 - b. Moisture absorbency and comfort

14. Study one female adult and one male adult in the age range of 35 to 60 years with reference to:
 - a. Health and illness
 - b. Physical activity and time management
 - c. Diet behaviour
 - d. Coping with challenges
 - e. Media availability and preferences
15. Calculation of nutritive value of foods to identify rich sources of nutrients.
16. Preparation of different healthy snacks for an adolescent suitable in her/his context.
17. Study of labels on:
 - a. Food
 - b. Drugs and cosmetics
 - c. Fabrics and apparel
 - d. Consumer durables
18. Observation and recording of group dynamics in different locations/ situations such as:
 - a. Home
 - b. Eateries
 - c. Playfield
 - d. School
 - e. Recreation areas
19. Analysis of own communication styles and skills.
20. Plan a budget for self for a given situation/ purpose.
21. List five problems faced by self or family as consumer. Suggest solutions to overcome the same.

CLASS XII

Theory

Total Periods 140

Unit I: Work, livelihood and career; Preparation, choices and selection **35**

- Work, age and gender
- Occupational heritage of India
- Career options
- Entrepreneurship and self-employment
- Life skills for career building

Unit II: Career Opportunities **5**

Scope of Human Ecology and Family Sciences in higher education and careers

Major concepts, relevance and skills in the following units;

A. Nutrition, Food Science and Technology **20**

Specific Careers and Areas

- Clinical nutrition and dietetics
- Public nutrition and health
- Catering and food services management
- Food processing and technology
- Food quality and food safety

B. Human Development and Family Studies **20**

Specific Careers and Areas

- Early childhood care and education
- Guidance and counselling
- Special education and support services
- Support services for children in difficult circumstances
- Management of institutions and programmes for children, youth and elderly

C. Fabric and Apparel 20

Specific Careers and Areas

- Care and maintenance of fabrics in institutions
- Design for fabric and apparel
- Retailing and merchandising
- Production and quality control in garment industry
- Museumology and textile conservation

D. Resource Management 20

Specific Careers and Areas

- Human Resource Management
- Hospitality management
- Designing of interior and exterior space
- Event management
- Consumer services

E. Communication and Extension 20

Specific Careers and Areas

- Management of development programmes
- Development communication and journalism
- Media management and advocacy
- Media design and production
- Corporate communication and public relations

PRACTICALS FOR CLASS XII

Specialisations in HEFS

Nutrition, Food Science and Technology

1. Qualitative tests on food adulteration
2. Development and preparation of supplementary foods for nutrition programmes.
3. Planning messages for nutrition, health and life skills using different modes of communication for different focal groups.
4. Preservation of foods using traditional and / or contemporary methods.
5. Packaging and study of shelf life of the prepared products.

Human Development and Family Studies

6. Preparation and use of teaching aids, using indigenous and locally available material to communicate socially relevant messages for children, adolescents and adults in the community.
7. Conducting mock sessions among peers in career guidance, nutrition counselling and personal counselling under supervision.

Fabric and Apparel Science

8. Preparation of articles using applied textile design techniques: tie and dye/batik/block printing.
9. Application of quality control techniques in garment industry:
 - a. Fabric inspection
 - b. Quality of seams and notions
 - c. Size labels
 - d. Packaging
10. Care and maintenance of fabric products:
 - a. Mending
 - b. Cleaning
 - c. Storage

Resource Management

11. Open an account in bank/ post office. Learn basic banking operations (Mock exercises in the lab with real bank forms)
12. Application of traditional/contemporary techniques of home decorations:
 - a. Floor and wall decorations
 - b. Flower arrangement
 - c. Other forms of local decorations

Extension and Communication

13. Analysis and discussion of print, radio, and electronic media with reference to: focus, presentation, technology and cost
14. Communicating with groups on any one of the following themes.
 - a. Social messages- gender equality, AIDs, female foeticide, child labour, rights abuse and other such themes)
 - b. Scientific fact/discovery
 - c. Any significant incident/event

Projects

Anyone of the following projects may be undertaken and evaluated:

1.
 - a. Analysis of traditional occupations prevalent in one's own local area, their beginnings, present status and challenges faced.
 - b. Analysis of gender roles, entrepreneurial opportunities, and future careers and family participation.
2. Documentation of any public/mass campaign being implemented in own area, with reference to:
 - a. Purpose of campaign
 - b. Focal group
 - c. Modalities of implementation
 - d. Stakeholders involved
 - e. Media and methods used
 - f. Comment on the relevance of the campaign.

3. Study of an integrated community-based programme being implemented in own area, with reference to:
 - a. Programme objectives
 - b. Focal group
 - c. Modalities of implementation
 - d. Stakeholders involved
4. Visit to the neighbouring areas and interviews with two adolescents and two adults regarding their perception of persons with special needs.
5. Profile any one person with special needs, child or adult: to find out their diet, clothing, activities, physical and psychological needs.
6. Observe and document any event in your school/ home or neighbourhood. Evaluate the same with respect to:
 - a. Its relevance
 - b. Resource availability and mobilisation
 - c. Planning and execution of the event
 - d. Financial Implications
 - e. Feedback from stakeholders
 - f. Suggest modifications for the future.

FEEDBACK QUESTIONNAIRE

(HUMAN ECOLOGY AND FAMILY SCIENCES TEXTBOOK)

Please give your comments on the textbook by filling this feedback questionnaire. You may please send the questionnaire by post, or through email, to Dr. Tannu Malik, *Assistant Professor*, Department of Education in Social Sciences, NCERT, Sri Aurobindo Marg, New Delhi-110016. Email: tannu_malik@rediffmail.com

We welcome feedback from teachers, students, parents and any other user of the textbook. *You may attach a separate sheet as per your requirement.*

Teacher/Student/Parent/Any other (please specify)

Name _____

School address _____

1a. Is the cover page and printing of the textbook attractive? Yes/No

1b. If not, please specify

1c. Do you find the language simple and easy to understand? Yes/No

1d. Mention the chapters/pages where the language is difficult to understand.

Chapter No

Page No.

Lines

2a. Do you find the content of the textbook adequate to meet the requirements of the syllabus?

Yes/No

2b. Mention the chapters which are lengthy.

2c. Mention the chapters which are too sketchy.

3a. Does the textbook explain the scope and significance of each domain of HEFS?

Yes/No

3b. If no, please specify.

4a. Certain practical and activities have been suggested in the textbook. Which of them have you undertaken in your class? Mention those which you found useful, engaging and enriching.

4b. Mention difficulties, if any, faced while organising/doing these practical/ activities.

5a. Do you find the illustrations helpful in understanding the content? Yes/No

5b. Mention the illustrations which are not helpful in understanding the content.

Chapter No.	Page No.	Figure No.
_____	_____	_____
_____	_____	_____

6. Mention the printing errors, if any.

Chapter No.	Page No.	Line
_____	_____	_____

7. Any specific comments/suggestions for overall improvement of the textbook.

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