

HUMAN ECOLOGY AND FAMILY SCIENCES PART II



11137



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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 cause 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).

The success of this effort depends on the steps that school principals and teachers will 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. Treating the prescribed textbook as the sole basis of examination is one of the key reasons why other resources and sites of learning are ignored. Inculcating creativity and initiative is possible if we perceive and treat children as participants in learning, not as receivers of a fixed body of knowledge. These aims imply considerably change in school routines and mode of functioning. Flexibility in the daily time-table is as necessary as rigour in implementing the annual calendar so that the required numbers of teaching days are actually devoted to teaching.

This textbook marks 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 hardwork done by the Textbook Development Committee and its Chief Advisors, Neerja Sharma, Lady Irwin College, University of Delhi and Shagufa Kapadia, M.S. University, Baroda, Vadodra. We are indebted to the institutions and organisations which have generously permitted us to draw upon their resources, material and personnel. 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 under the Chairpersonship of *Professor* Mrinal Miri and *Professor* G.P. Deshpande, for their valuable time and contribution. We are particularly grateful to the members of the sub-committee for Human Ecology and Family Sciences (HEFS), Mariamma Varghese, *former Vice-Chancellor*, SNDT Women's University, Mumbai, and S. Anandalakshmy, *former Director*, Lady Irwin College, University of Delhi for their contribution for reviewing the textbook.

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

New Delhi
April 2009

Director
National Council of Educational
Research and Training

PREFACE

The textbook on Human Ecology and Family Sciences (HEFS), a subject so far known as 'Home Science', has been reframed keeping in view the principles of the National Curriculum Framework – 2005 of the NCERT. Conventionally, 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. They also provide ample scope for professional avenues of higher education and career opportunities in this applied field. Many components of the field have grown to become specialised areas and even super-specialisations. They range from professions catering to various health and service institutions/agencies, educational organisations, industry and business houses of textiles, garments, foods, toys, teaching-learning materials, labour saving devices, ergo-nomically appropriate equipment and work stations. In Class XI the 'self and family' and the 'home' are focal points for understanding the dynamics of individual lives and social interaction. In Class XII, the emphasis will be on 'work and careers' through the life-span.

The subjects in HEFS concern themselves with enhanced human resources as well as productivity, and with better quality of life for individuals and society in general. People cannot be productive if they are physically unwell due to unhygienic personal and environmental conditions, children cannot learn if they are mal-nourished, or scarred from abuse and neglect, people cannot work if disturbed by family turmoil or resource management problems, or when preoccupied with rejection in the family or domestic violence. Conversely, human beings whose development is fostered by positive environmental surroundings, nurturing relationships, good nutrition, access to basic amenities for health, safety and sanitary living conditions, can be well-adjusted and productive citizens.

The possibilities of teaching and research careers are present at all levels of education, be it at school or college or university. To the professionals in the specialisation of Food and Nutrition, the spectrum of opportunities is wide ranging from the service sector as dietitians, healthcare consultants/counsellors to the food industry, in catering and food service management/institutional management, in accordance with the thrust of their educational inputs and acquired interests, skills and competencies. For professionals in Human Development and Family Studies, job opportunities range from being at several cadres of functionaries in social development organisations for children, adolescents, women and families, in early childhood care and education programmes, to being professionals in counselling settings at various levels and age groups. Those trained in Fabric and Apparel find their future careers in textile design, textile or fashion or garment industry, and entrepreneurship.

To the Resource Management trainees, the career choices abound between interior decoration, hospitality administration, ergonomics, to consumer

education and services as well as entrepreneurship, event management, investment and insurance enterprising. Those who specialise in Communication and Extension can work in media related fields, or be welfare and programme officers, administrators and supervisors in field-based activities of NGOs, private and public sector organisations.

The new textbook 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 outside. 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 chapters address the significant principles of equity, equality and inclusiveness. These include gender sensitivity, respect for diversity and plurality in relation to rural-urban and tribal location, caste, class, value for both transformative traditions and modern influences, concern for society and pride in national symbols.

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 available resources.

The textbook adopts a developmental framework using the life-span approach. However, it is structured a little differently in terms of the sequence of stages in human development. The first unit begins with adolescence, as this is 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, emotional, social and cognitive changes that the student is undergoing. Once the adolescent learner develops some understanding of the self, the second unit spans to the diverse contexts in which one functions — these include the family, school, community and society. Relationships, needs and concerns stemming from each context are dealt with in this unit. Following this are two units dealing with the study of ecological and family issues arising in childhood and adulthood respectively. This approach would help the learner understand and analyse the significance of nutrition, health and well-being, growth and development, education and communication, apparel and management during these two phases of life, thereby completing the cycle of development. Thus the textbook addresses some significant concerns and challenges of each life stage, providing reasonable suggestions and resources necessary to enhance the quality of life of self, family, community and society.

OBJECTIVES

The HEFS textbook 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 critical analysis of issues and concerns of equity and diversity.
5. appreciate the discipline of HEFS for professional careers.

NOTE FOR THE TEACHERS

As mentioned in the Preface, this textbook is intended to reflect a holistic perspective of what has been conventionally known as Home Science. The textbook is structured in two parts, i.e., Part – I and Part – II with a total of four units comprising 19 chapters. The units are organised along a developmental framework. Unit I begins with the stage of adolescence and related concerns. Unit II deals with the expanding interactions of the adolescent with others in the family, school, community and society, and the needs emerging from each of these contexts. Units III and IV, i.e., Part – II, focus on childhood and adulthood respectively. The correspondence of the units and the chapters in the textbook with the NCERT syllabus is indicated below.

PART - I		
Units and Chapters in Textbook		Units and Sections in NCERT Syllabus
Chapter	Title of the Chapter	Units and Sections
1.	Introduction: HEFS: Evolution of the discipline and its relevance to quality of life	Introduction: HEFS: Evolution of the discipline and its relevance to quality of life
Unit I Understanding oneself: Adolescence		
2.	Understanding the Self	
	A. What makes me 'I':	A. Sense of self understanding who am I?
	B. Development and Characteristics of the Self	B. Characteristics and needs
	C. Influences on Identity: How do we Develop a Sense of Self?	C. Influences on identity
3.	Food, Nutrition, Health and Fitness	D. Food, nutrition, health and fitness
4.	Management of Resources	E. Management of resources — time money, energy and space
5.	Fabrics Around Us	F. Fabric and apparel
6.	Media and Communication Technology	G. Media and communication technology
7.	Effective Communication Skills	H. Communication skills
8.	Living and Working in a Global Society	I. Living and working in a global society
Unit II Understanding Family, Community and Society		
9.	Relationships and interactions with 'significant others' within:	A. Relationships and interactions with 'significant others' within:
	A. Family	- Family

	B. School: Peers and Educators	- School-peers and educators
	C. Community and Society	- Community
		- Society
10.	Concerns and Needs in Diverse Contexts: Family, School, Community and Society	B. Concerns and Needs in Diverse Contexts: Family, School, Community and Society
	A. Nutrition, Health and Hygiene	a. Health, nutrition and hygiene
	B. Work, Worker and Workplace	b. Activity, work and environment
	C. Resource Availability and Management	c. Resource availability and management
	D. Learning, Education and Extension	d. Learning, education and extension
	E. Textile Traditions in India	e. Textile heritage of India
PART - II		
Unit III Childhood		
11.	Survival, Growth and Development	- Survival, growth and development
12.	Nutrition, Health and Well-Being	- Nutrition, health and well-being
13.	Care and Education	- Care and education
14.	Our Apparel	- Clothes and apparel
		- Children with special needs
		- Socio-cultural influences on children
Unit IV Adulthood		
15.	Health and Wellness	- Health and wellness
16.	Financial Management and Planning	- Financial planning and management
17.	Care and Maintenance of Fabrics	- Care and maintenance of fabrics and apparel
18.	Perspectives in Communication	- Perspectives in communication
19.	Individual Responsibilities and Rights	- Individual responsibilities and rights

Each chapter begins with a brief introduction to the unit followed by learning objectives which serve as a useful guide to the teacher and the student. Most chapters also include instructions for activities. Please ensure that the activities are carried out, as this would encourage active participation of the students, create and sustain interest, and enhance learning. The activities may be modified to adapt to local contexts (e.g., urban, rural, tribal, different social class groups) as well as to gender variations.

The practicals depart from the conventional laboratory experiments and direct the student towards field based experiences. This would enable the learners to engage in first-hand interactions with children, adolescents and adults in real life contexts, including the family, neighbourhood, and community. The practicals are also aimed at developing basic research skills of observation and interview. The

teachers are welcome to modify the practicals in accordance with the resources available in their specific contexts.

Each chapter includes key terms; and definitions are provided only for the more complex terms. Review questions are also provided at the end of each chapter with the purpose of enabling both teachers and students to recapitulate and revise the main ideas presented in the chapter. The key terms and review questions will also help the students to connect with the content on which they are likely to be examined.

The present textbook on Human Ecology and Family Sciences is the first attempt to present at the higher secondary level contemporary and integrated perspectives on the five areas — Food and Nutrition, Human Development and Family Studies, Fabric and Apparel, Resource Management, and Communication and Extension. The aim is to project the field as a professional discipline.

Your feedback to the textbook is of utmost importance for us to improve the content for the next edition of the textbook. A feedback form has been given on the page *xiv* consisting of a set of questions related to different dimensions of the textbook. Please spare some time to respond to these questions after you have used the book. You may encourage the students also to respond through these forms or on a separate sheet. In addition, you are free to provide any other comments or suggestions. We look forward to your response. You may answer on the sheets attached and send the feedback by post at the given address. **The feedback form is also available on the NCERT website www.ncert.nic. The form can be filled and also sent to dws_ncert@yahoo.co.in**

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We also gratefully acknowledge contributions of Mariamma Varghese, *former Vice-Chancellor*, SNDT Women's University and S. Anandalakshmy, *former Director*, Lady Irwin College, University of Delhi, for their expert review, comments and suggestions for this textbook. The interesting Crossword Puzzle at the end of the textbook prepared by Nandita Chaudhary from Lady Irwin College, Delhi, is thankfully acknowledged.

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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. Mona Yadav, *Professor and Head*, Department of Gender Studies, NCERT, Sri Aurobindo Marg, New Delhi-110016. Email: dws_ncert@yahoo.co.in

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 practicals 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 practicals/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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Chapter 3	Food, Nutrition, Health and Fitness
Chapter 4	Management of Resources
Chapter 5	Fabrics Around Us
Chapter 6	Media and Communication Technology
Chapter 7	Effective Communication Skills
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UNIT III

CHILDHOOD

The theme of this unit is 'Childhood'. You may wonder why did the book address the adolescent years first and childhood later. Well, it is because if you as an adolescent understand issues about yourself first, it would be easier to grasp the issues that are concerned with the stage of childhood, and later with adulthood. In this unit you will be studying about children's growth and development, critical concerns about their health and nutrition, education and clothing. As we would like children with disabilities to be an inclusive part of our society, the chapters provide us important information on their needs and ways to meet them.



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11

SURVIVAL, GROWTH AND DEVELOPMENT

LEARNING OBJECTIVES

After completing this chapter the learner is able to –

- explain the concepts of survival, growth and development.
- analyse the relationship between growth and health.
- discuss the characteristics of different stages of childhood.
- describe developmental milestones.
- examine development in different domains of childhood.

11.1 THE MEANING OF SURVIVAL

The term survival has many meanings. But all of us associate it with “remaining alive” and “maintaining essential life functions” at a basic level. Children remain alive and capable of basic functions when they are provided with care, adequate food and protection from disease-causing organisms. If they suffer from lack of nutrients or develop infections, they need to overcome these “assaults” as they threaten their survival. If the children come from low income families, it is very important to provide them extra food and give adequate nutrients in right amounts and proportions. In addition they need to be immunised against the killer diseases of infancy and childhood such as tuberculosis, whooping cough, diphtheria, polio and tetanus. Diseases such as malaria, pneumonia are also a threat to children’s lives.

According to the 2007 UNICEF report 9.2 million children born alive worldwide may die before their fifth birthday. Of these, three million children

are from our part of the world — South Asia. Most of these children live in developing countries and die from a disease or a combination of diseases that could be easily prevented or treated – antibiotics for pneumonia, for example, or a simple mix of salts and sugars for diarrhoea. Malnutrition contributes to over a third of these deaths. Diarrhoeal diseases account for 17 per cent of deaths among children under five years of age worldwide, or nearly two million child deaths every year — making them the second most common cause of child deaths globally.

Child mortality is closely linked to poverty. Advances in infant and child survival have occurred more slowly in poor countries and for the poorest people in wealthier countries. Improvements in public health services are the key, including safe water and better sanitation. Education, especially for girls and mothers, will also save children's lives. Raising incomes can help, but little will be achieved unless a greater effort is made to ensure that services reach those who need them most.

A child begins to grow adequately only when enough essential inputs are present in her/his environment. A child who is simply surviving will, of course, not grow optimally. In fact, under such conditions the child may even stop growing completely. This is called growth failure. Let us try to learn more about how children grow.

11.2 GROWTH AND DEVELOPMENT

We have been using the words growth and development in the text. Do they mean the same thing or are they different? They have slightly different meanings. **Growth** refers to changes in size or quantity, i.e., physical changes that can be measured. **Development** refers to changes in quality. Increase in weight, height and the size of the internal organs is growth. However, we do not only grow in size of the physical body. If that were so, a newborn would simply be a bigger baby at the age of 20 years! Along with growth in size, there is change in form and complexity of body parts and their functioning. Thus the infant begins to raise her/his head, then roll over on the back, then sit up, then crawl, walk and then run. These changes are qualitative. Within each of these qualitative transformations there is quantitative change. Thus, when the child begins to sit, she/he can sit without falling over, for longer periods of time; when she/he begins to walk, she/he can walk swiftly.

Look at the figure on the next page which indicates the size of the child with reference to age.

It is evident that as a child grows from infancy to the preschool years, there is increase in height and weight. Also, the proportions of various body parts such as the head and chest change. But is that all? No. We all know that along with these physical changes, the body organs are continuously increasing in size and improving in functional capacity. This process does

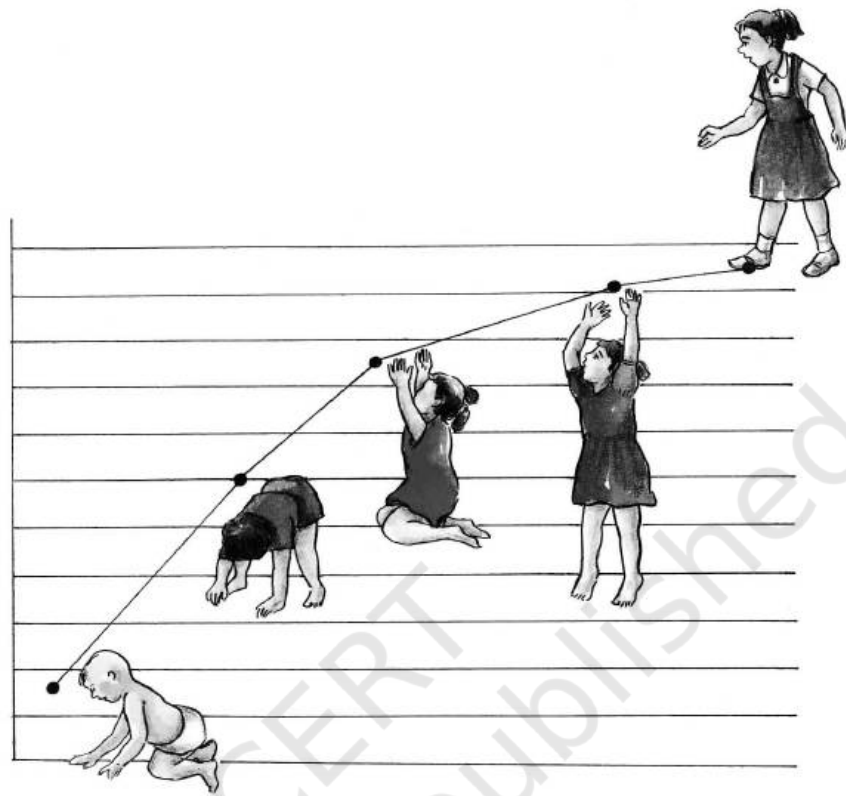


FIGURE 1: SIZE FOR AGE IN CHILDREN

Source: Adapted from WHO

not stop at the preschool years. It continues through the school years and adolescence till the adult body size, composition and functionality are reached.

While growth refers mainly to physical changes, development occurs across many dimensions simultaneously. The infant's thinking capabilities develop; she/he forms relationships with people, learns to understand and manage her/his emotions and speaks increasingly complex sentences. Thus, development is multifaceted.

ACTIVITY 1

Would you term the following changes as development?

- walking to running
- deciding which movie to watch or deciding which career to choose as an adolescent

Give reasons for your answers and discuss with others in the class.

We can define development as the orderly appearance over time of the physical structures, psychological traits, behaviours, ways of thinking and adapting to the demands of life. These changes are progressive, orderly and last for a reasonable length of time. By 'progressive' it is meant that these changes result in the child

acquiring skills and abilities that are complex, finer and more efficient than the ones that preceded these. By 'orderly' it is meant that there is an order in development. Every development is built on the previous one and cannot occur before it. The changes must last for a reasonable length of time to be called development. When the infant cries with hunger there is a change in behaviour. But as soon as the infant is given food, she/he stops crying. Thus, the crying behaviour lasts for a very short time. Such a short behavioural change is not development.

11.3 AREAS OF DEVELOPMENT

Let us now define areas of development. Although we live as an integrated person, we separate the different dimensions of development for the purpose of scientific study. The various developments that take place in the life of an individual can be classified as – physical development, motor development, sensory development, cognitive development, language development, social, emotional and personal development.

Physical development refers to the physical changes in the size, structure and proportion of the parts of the body that take place since conception.

Motor development refers to control over body movements which result in increasing co-ordination between various parts of the body. Physical growth makes the body grow, whereas, it is motor development which results in smooth, controlled and effective body movements. The control over movements is brought about by control over the movement of the muscles of the body. Motor development is of two types. Gross motor development refers to control over the movements of the large muscles of the body such as muscles of the shoulder, thighs, upper arm, lower arm, abdomen and back. As a result of this control we are able to sit, bend, walk and move our whole arm. Fine motor development refers to the control over the fine muscles of the body such as that of the wrist, fingers or toes. As a result of this control we are able to write, turn the pages of a book, stitch and knit.

Cognitive development refers to emergence of thinking capabilities in the child from the time she/he is born. As one grows from one year to the other there are qualitative differences in the way in which one thinks. These changes in our way of thinking are because of changes in our mental structures and understanding of experiences, and this is referred to as cognitive development. To give just one example, the infant behaves as if the object removed from her/his eyes does not exist any more. It is only in the second half of the second year of life that the infant begins to understand that objects exist even though they are out of sight.

Sensory development refers to the development of the sensory capabilities of vision, hearing, smell, touch and taste. While the infant is

ACTIVITY 2

Which area of development does each of the following changes represent?

- Learning to share
- Learning to count
- Using tenses correctly
- Being able to run
- Growth in height
- Controlling one's anger
- Using the scissors
- Turning towards the direction of sound

born with fairly well developed sensory capabilities, these refine and develop further with age. For example, the newborn can focus her/his eyes on faces and objects best when they are eight inches from the face. Gradually, the child's visual abilities develop to enable her eyes to focus on objects whether they are farther or nearer.

Language development refers to the changes that enable the infant who can only cry at the time of birth to understand the speech of others as well as speak complex sentences.

Social development refers to the development of those abilities that enable an individual to behave in accordance with the expectations of the society, form and sustain relationships with people.

Emotional development refers to the emergence of emotions and learning of the socially acceptable ways of expressing them. Personal development refers to the domain of the self and includes the evolution of one's idea of who he or she is; what personal talents and skills one has and what ambitions for the future one holds.

Although all the above domains are listed separately (personal, cognitive, social, other), in fact these are simply different dimensions of an individual in real situations, and must be understood as such. For instance, a child learning how to ride a cycle (a physical set) also has a corresponding emotional side (maybe fear or excitement) that must be considered while teaching how to ride a cycle.

Good nutrition has an important role in growth and development. As children enter school age, their nutritional needs increase. In fact, there are differences in the nutrient requirements of boys and girls from the age of 10 years.

There are various ways of classifying childhood years into different stages. One such approach is to **classify childhood based on nutrient requirements** as suggested by the Indian Council of Medical Research (ICMR). The stages thus identified would be as follows–

- **Infancy:** Birth–6 months, and 6–12 months
- **Preschool Years:** 1–3 years, and 4–6 years
- **School Years:** 7–9 years, 10–12 years

It is interesting to note that nutrient requirements of boys and girls remain the same till the age of nine years. Once the child completes 10 years, the nutrient needs of girls and boys start to differ.

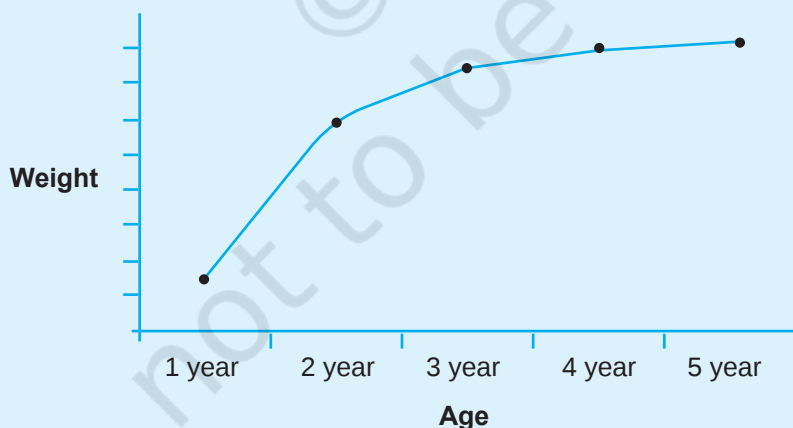
Now, let us try to understand the relationship between **growth** and **health**. We all know that normal growth is a good indicator of health.

But normal growth by itself is not sufficient to predict good health. A range of resources and conditions, such as adequate educational and physical stimulation within the home, are required to ensure that broader developmental milestones are achieved. What do we mean by resources and conditions here? These may include a stimulating environment as we mentioned earlier. These may also include access to adequate breast milk; a safe, hygienic environment; proper health care services; avoidance by the mother of habits such as smoking or drinking. In other words, normal growth is a necessary condition for attaining all the functional capacities associated with health, but growth alone is not adequate to do so.

There is research evidence to show that all children grow very similarly for the first five years of life when their physiological needs are met and their environments support healthy development. Growth falters or slows down because of environmental “assaults” such as the attack by infections and infestations or because of lack of good food in adequate amounts. In India it has been found that children from well-to-do families have growth performance similar to that in children from developed countries, specially when parents have higher levels of education.

Growth charts continue to be widely used across the globe for monitoring the growth of children. There is an upward direction in a normal growth curve. But if something goes wrong, the curve would get disturbed. The

ACTIVITY 3



The figure given above shows you a normal growth curve. Now answer the following questions.

1. A child has a bout of severe diarrhoea. What would happen to the growth curve?
2. A malnourished child is given good food for two months. What will be the change in the growth curve?

curve may become flattened or may even start moving downward. What do the growth curves mean if they show–

- flattening
- an upward direction
- a downward direction

Flattening would depict that the growth has stopped. An upward direction shows that growth is taking place. A downward trend shows a child falling behind the healthy growth pattern. If this child is given extra food and infections are treated, an increasing trend will again be visible. This highlights the catch-up growth.

11.4 STAGES IN DEVELOPMENT

You have read till now one way of classifying the human life span, i.e., on the basis of nutritional requirements. In the field of Child Development the life span is classified into stages on the basis of milestones of development. By this term, we mean specific abilities/tasks or skills that most children achieve within the age range. These tasks are then used to assess whether the child's development is as per her/his age or not. These are also referred to as norms of development. There are milestones in each area of development and this will become clear to you as you read the chapter further.

Human life span can be divided into five stages: **infancy** (birth-2 years), **early childhood or preschool years** (2–6 years), **middle childhood years** (6–11 years), **adolescence** (11–18 years) and **adulthood** (18 years and above).

Further, in the chapter you will read about how development takes place in different aspects or domains during each of these stages. Physical development and language development are two examples of domains. Before we describe the development in the various domains, let us read briefly about the child in the first month of her/his birth, as this is a very special stage.

Neonate

Neonate is the term used to refer to the newborn baby in the first month of life. We tend to think of newborn babies as helpless. While it is true that they are completely dependent on adults, it is also true that they have many capabilities that help them to adapt to their surroundings and they are more aware than we imagine.

- (i) **Reflexes:** Neonates are born with certain reflex actions which help them to survive and adapt in the time it will take them to develop motor capacities. **Reflexes are simple, unlearned responses that are**

elicited by certain type of stimulation. They do not require higher brain functions – they occur without thinking; in other words, they occur automatically. For example, when something touches your eye, you blink automatically to protect the eye – this is the eye blink reflex. The newborn has other reflexes such as the sucking reflex which helps in feeding, elimination reflex which helps in urination and bowel movements.

- (ii) **Sensory capabilities:** Vision is the most well developed sense at birth. The neonate can distinguish between light and dark and actively searches for light. She/he can follow a moving object with her eyes, and can focus best when the object/person is about 8 inches from her/his face. The infant is predisposed to focus on the human face.

Newborns respond to sound and are most responsive to human voice than any other sound. They can distinguish between basic tastes – sweet, sour, salt and bitter. They are responsive to touch and can distinguish good and bad smells, responding by turning away their face from the latter. Newborns sleep for about 16–18 hours in a day in phases and when awake and alert, they look around the surroundings and like it when the caregivers interact with them.

Crying is the way the newborn communicates her/his needs. There are different cries that indicate hunger, anger, pain, discomfort and the caregivers are usually able to make out the reason for the infant's cries.

11.5 DEVELOPMENT ACROSS STAGES

Let us now read how development takes place in the various domains during the first four stages of the human lifespan – infancy, early childhood, middle childhood and adolescence.

Physical and motor development

- (i) **Increase in height and weight:** The most dramatic gains in height and weight occur in the prenatal period when a single celled organism grows to a foetus that is 20 inches in length and about 2.5 to 3 kgs in weight. Infancy is the next period of fastest growth. By the time the infant is six months old, she/he has doubled her weight, and by the time she/he is one year old the weight is three times that at birth. Most infants are 8 to 9 kgs by the time they are a year old.

Table 1: Weight for Age		
Age Range	Girls (kg)	Boys (kg)
0-2 years	3.2 – 11.5	3.3 – 12.2
2-5 years	11.7 – 18.2	12.4 – 18.3
5-6 years	18.3 – 20.2	18.5 – 20.5
6-7 years	20.3 – 22.4	20.7 – 22.9
7-8 years	22.6 – 25.0	23.1 – 25.4
8-9 years	25.3 – 28.2	25.6 – 28.1
9-10 years	28.5 – 31.9	28.3 – 31.2

Now, with the help of your teacher prepare a table up to the age of 19 years.

Table 2: Height for Age		
Age Range	Girls (cms)	Boys (cms)
2-5 years	85.7 – 109.4	87.1 – 110.0
5-8 years	109.6 – 126.6	110.3 – 127.3
8-11 years	127.0 – 145.0	127.7 – 143.1
11-14 years	145.5 – 159.8	143.6 – 163.2
14-17 years	160.0 – 162.9	163.7 – 175.2
17-19 years	162.9 – 163.2	175.3 – 176.5

Source: Child Growth Reference Standards from birth to 5 years, 2006, and WHO Growth Reference data for 5–19 years, 2007. These standards of height and weight are expected to be achieved under desirable health and nutritional conditions. The children from six countries were assessed to arrive at the above mentioned standards and one of the countries sampled was India.

- (ii) **Motor development:** Gross motor development (e.g., use of arms and legs) precedes the development of fine motor skills (e.g., holding a glass in one hand). Let us read the milestones in the development of gross motor skills first. It is important to remember that each milestone is achieved in a certain age range rather than in a specific month. What this means is that there are differences among children in the rate of development so that one cannot specify exactly the month when a particular milestone will be achieved. If a child does not achieve more than one milestone in the expected age range, then it is a cause for concern. Table 3 lists the important motor milestones in the first 10 years of childhood.

Table 3: Motor Development Milestones

S. No.	Age	Nature of Milestone
1.	Birth-3 Months	Lifting and holding the head
2.	Newborn	Newborns can move their head from side to side slightly
3.	1 month	They can raise their head
4.	2 months	They can also lift their chest while lying on stomach (prone position)
5.	3 months	The infant begins to hold her/his head, and this is a major milestone in development. If the child is unable to do this even by the age of 6 months, it shows that there is delay in development
6.	4 – 6 months	Can roll over from back to stomach and stomach to back
7.	6 – 8 months	- Sitting with adult support or in a seat with straps - Sitting without support
8.	8 – 9 months	- Crawling; however, some children do not crawl and directly learn to stand after being able to sit - Standing if supported or by holding on to something
9.	10 – 11 months	Can pull up from sitting position to standing; standing independently briefly
10.	12 – 18 months	- Walking; initially the child's walk is unsteady but gradually it becomes steady. - Running; after the child learns to walk, she/he begins to run, falling down often. As the balance improves, she/he is able to run in a more coordinated manner without falling frequently by the age of 2 years.
11.	18 – 24 months	Climbing stairs/steps by placing both feet on each step, if hand held by someone
12.	2 years	- Walking backwards, goes down slide, climbs ladder - Jumping from low platform with both feet
13.	3 years	- Can balance on one foot - Can kick large ball - Can throw and catch a ball
14.	3 – 4 years	Can walk upstairs with alternating feet as adults do, by holding onto something
15.	5 years	Skiping and pedalling a tricycle
16.	6 years	Well coordinated hopping, jumping and climbing
17.	7 years	Balancing and pedalling a bicycle
18.	8 – 10 years	Has balance, coordination and strength that allows child to participate in various games and gymnastics

Language development

Many species have systems of communication. Can you think of some species where the members communicate with each other and also think of the way in which they do so? The dance of the honey bee communicates to the other bees the approximate direction and distance of food source and the enemy. Birds communicate that they have taken possession of a certain tree or bush by special chirps and shrieks. Then what is special about the human language. Is it too not a method of communication? The entire communication pattern of all species other than humans is inborn – that is, the communication pattern is un-influenced by experience. In contrast, while the human infant is innately endowed and programmed to learn language, the infant's language learning is influenced by the environment and humans can produce an infinite number of original sentences – by 'original' we mean not imitated or inborn but produced by the individual. Humans can also talk about events and objects in another time and place.

ACTIVITY 4

Observe a 2-year-old child with her/his father/mother in your neighbourhood and observe them as they talk with each other. If you can, write down what each one of them says. Focus on what the child said and analyse whether the child was repeating what the adult was saying or was the child thinking on her own and speaking 'original' sentences. If possible observe an even younger child who has just learnt to speak and hear what she/he says. Did the child speak 'original' sentences or did she/he imitate the adult's speech or was it a combination of both?

All children – whatever language they may speak – develop language through similar stages and sequence. The sounds made by the children in the first year of life, before they are able to speak words are called pre-linguistic sounds. These include crying, cooing and babbling. Children acquire the first words around the end of the first year and after that language develops rapidly and by adolescence they have become sophisticated producers of language though vocabulary continues to develop even later throughout life. An important aspect about language is that the child from the first day can understand more than she can speak. Comprehension (receptive language) precedes production (expressive language).

Stages in Development of Language

- (i) Crying is the first form of a child's communication. It is innate, or inborn which means that the child does not have to be taught to cry. In the first month of birth, this is the only sound that the infant makes.

An infant's crying produces a physiological response in adults and children which motivates them to run to the baby to try to relieve her/his distress. The child's crying communicates a variety of needs as the child has a different type of a cry for different bodily states – hunger, pain, illness.

By the second month, children begin 'cooing'. This is also innate, vowel-like sound – like "oooh", "aaaaaah" – which the infants make when they are contented or feeling pleasure. When the infant coos, the parents respond by talking, smiling or imitating the sound and then wait for the child to coo again. Thus, it appears as though the infant and the parents are 'talking'. Cooing decreases markedly by about 8 months and by 6 months the infant begins to babble.

- (ii) Babbling is a consonant-vowel combination like *da*, *ma* or *pa*. The infant repeats this combination, leading to sounds like "dadada", "mamama". Babbling sounds like human speech. The infant is capable of producing all the sounds contained in all human languages. Thus, the infant can produce sounds used in the German or African languages even though she/he has not heard those sounds. Even a deaf child, who is not able to hear the speech of others, babbles. These two facts bring out that babbling is innate. However, gradually, the sounds that the child does not hear in her environment get dropped. This tells us that the environment plays a tremendous role in language learning.

Around the first birthday, the child says the first word. How do we know that what the child has uttered is a word? We know it is a word because she uses it consistently to refer to the same meaning. First words are brief, consisting of one or two syllables – *papa*, *amma*, *tata*, *bye*. By 18 months children begin to produce about two dozen words. But at this time they understand simple commands and many more words. By two years of age the child has about 250 words and after that adds hundreds of words every year. Around the second birthday the child begins to combine words to speak two word 'sentences'. The child's first words are names of people, animals and things – i.e., nouns, action words (*bye bye*); and expressive words (*no*, *namaste*). Sometimes the child uses a word to refer to things and actions for which they do not yet have words.

An interesting feature of the child's one-word or two-word utterances is that these express complete meanings which are found in complete sentences. Thus, when the child sees the mother and says "mamma", depending upon the context, it may mean that "I want to go to mamma" or "My mamma is there" or any other meaning. This simple one or two-word sentences which express entire meanings are called telegraphic speech.

Between 2 to 3 years of age the child acquires grammatical forms and her/his sentence structure expands to include the words that were missing in telegraphic speech – articles, conjunctions and possessives.

By 4 years of age, the child's language is well established – children can engage in lengthy conversations, ask questions and can take turns in talking. By age 6 their vocabulary is about 10,000 words. By age 7 to 9, children understand that words have multiple meanings and enjoy jokes and riddles that are language based.

ACTIVITY 5

Interact with/observe a 2-year-old child. Note down the sentences she/he says. Were they two-word utterances or were they complete sentences? If they were two-word utterances, how did you understand the meaning of what the child said?

Socio-emotional development

- (i) **The early relationships and emotions:** You would have noticed that infants and their caregivers are attached with each other. How do these bonds develop? It may seem surprising but the infant from the first day displays behaviours that elicit social and/emotional responses from caregivers. Also, adults show specific behaviours that cause the infant to be attracted towards them. Thus both the caregivers and the children have behaviours that help them interact with each other and develop attachment.

ACTIVITY 6

Can you think what these behaviours may be? Write your responses and compare with our discussion under the heading 'Forming Attachments'.

(a) *Forming Attachments:*

1. The caregivers provide a lot of physical contact to the infant. We like to pick up babies not only during routine activities but also just for the sheer pleasure of it. Infants have an inborn need of physical contact and when the caregivers pick up the child, they fulfil this need.
2. Adults and older children use a special type of speech when talking to infants. It is called motherese. It has very short sentences, simple words, certain modulations of voice and nonsense sound such as clucking noises. Such speech delights the infant and she/he responds by cooing and babbling.
3. We smile at the infant and seeing us smile, the infant smiles back, coos and babbles.
4. Caregivers like to gaze at the infant which sets up a communication between the caregiver and the infant. This mutual gazing is most important in establishing a link between the two and is one of the first forms of socio-emotional interactions.

5. Caregivers exaggerate their facial expressions when talking to the infant, and this helps the baby to learn to discriminate various emotional expressions.
6. Caregivers also make a lot of rhythmic movements when interacting with the infant. We nod and shake our head from side to side and bring it forward. Some of the movements and sounds we make, such as rocking and swaying, are soothing to babies.
7. Caregivers also play simple games with the infant when she/he is a little older, e.g., peek-a-boo is common in all cultures.
8. Just as caregivers communicate with infants, infants also initiate behaviours to make social contact. When infants cry in discomfort, the mother comes running. When they coo, babble, smile and gaze on their own initiative and these behaviours increase the caregivers' protective.

The above mentioned behaviours take place many times during the day as the caregivers repeatedly feed, bathe and change the infant's clothes, or soothe her/him when she/he is distressed. This leads to the development of the bond of attachment between them.

Since in most cases, it is the mother who primarily looks after the child, the infant usually first becomes attached to her. This relationship with the mother is the first social relationship.

If the interaction with the mother is not warm and pleasant, the infant is likely to become irritable and anxious. In such a case, while the physical needs of the infant are fulfilled, the emotional interaction with the adult is inadequate – the infant is not able to form appropriate attachment. However, human beings are resilient and can recover from early experiences of social deprivation if their environment improves later for the better and they find loving and nurturing caregivers.

Forming a secure attachment is a very important developmental task in the first year of life. Developing a secure relationship with an adult is important for the child to develop a feeling of trust in people. A secure infant cries less, cooperates more with caregivers, does not cling to the caregiver fearfully all the time and is ready to explore the surroundings. During the pre-school years, such a secure child is emotionally warm, socially mature, popular among peers, curious and self-reliant.

We have spoken only about the infant forming the attachment bond with the mother. **What about bonding with the father?** Because of traditional division of labour in our society, it usually happens that the father is the bread-winner and remains out of the home for a large part of the day, while the mother spends more time with children. Does this mean that infants will not become attached

to the father? And what about the families where the mother is working and is out of the home for long hours? Research has shown that it is not the amount of time spent with the child that helps in the formation of the bond but what the adults do with the child in the time they spend together.

You would have seen that even though fathers and employed mothers spend comparatively less time with their children, the children seek the father's/mother's attention when they are present. Hence, it is the quality of time spent by caregivers with children that largely determines caregiver-child attachment.

After the first strong bond with one or two persons, children form more relationships with other people in the family, especially with those who interact with them. If the child goes to a day care centre where she/he receives quality care, include social interaction, play and rest she/he would form positive relationship with the caregivers there.

(b) *Children's emotions:* There is one debate among researchers regarding the emotions young children show because one cannot know the exact linkage between the child's facial expression and inner feelings. Nonetheless, infants experience what we call joy, distress, anger and even rage. Gradually, emotions get differentiated into happiness, interest, excitement, sadness, dejection and fear. Around six months of age, the child shows fear of strangers and may get upset and begin to cry when they approach her/him. This is because the child gains the ability to recognise people once she/he becomes fearful of unfamiliar faces. This is called 'stranger anxiety'. It reaches its peak around 8 to 12 months of age and disappears between 15–18 months of age. A little after stranger anxiety appears, the infant develops 'separation anxiety' – the fear of being separated from caregivers they are attached with. They are distressed when the mother is out of sight. This fear is at its peak around 12 to 18 months of age and disappears around 20–24 months of age. It is important to note that all children are not equally wary in all situations. It varies with their prior experience, temperament and the nature of other people around them.

(ii) **Parents' child rearing practices:** When parents bring up their children, the process is called child rearing. How parents rear their children has a marked effect on children's personality. We all learn to behave in ways that are seen as appropriate in our community and society. We learn this as a result of direct instruction by parents and others around us, and indirectly as we observe others behaving in particular ways. This process by which children acquire behaviours, skills, values, belief, and standards that are characteristic, appropriate and desirable in

their culture is referred to as socialisation. The goals of socialisation – that is, what one would want the child to learn and acquire – varies from one culture to another, and even from one family to another.

Parents differ with respect to the amount of warmth, love and affection they show towards their children. Thus, we can think of ‘warmth’ and ‘coldness’ as two ends of a continuum, and most parents would be at different points on it. Parents also vary in terms of how restrictive or permissive they are towards many of their child’s behaviour patterns. Those who are restrictive tend to impose many rules and watch their children closely. Permissive parents impose few rules and frequently allow their children to decide for themselves. Thus, ‘restrictive–permissive’ is another aspect of the parent’s child rearing practices.

Child rearing practices can also be classified on the basis of the type of disciplinary techniques used by the parents. In order to discipline their children, some parents explain to them the consequence of their actions and reason with them and in order to prevent them from doing unsuitable actions. They are firm in their discipline but are affectionate and gentle with the child. This is called the **affection-oriented disciplining approach**. On the other hand, some parents use commands to stop their children from behaving in a particular way, without giving them the reason. They may also threaten the child and use physical punishment. This is a **power-oriented approach of disciplining**.

In general, we can say that when parents and caregivers themselves model (show) the qualities they wish the children to have, when they do not use punishment to discipline the child, especially physical punishment, and instead use explanation to point out desirable

ACTIVITY 7

You must have had the opportunity to observe some parents in your extended family and the way they interact with their children. Can you see the relationship between what you have read in the chapter and what you find those parents doing? Give your comments. Form groups of 4-5 in your class and discuss your observations with each other.

behaviour, these child rearing practices contribute to the shaping of an all rounded personality in children.

- (iii) **Relationship with siblings and peers:** Most families in our country have more than one child, and in many cases the older child is required to look after the younger one. Siblings influence each other’s development to a great extent. Can you say how the child’s relationship with siblings would be different from her/his relationship with parents? Siblings are near in age to each other and so the relationship between them is more

equal, friendly and democratic as compared with parents. A positive relationship between the siblings can provide emotional support and nurturance, as they play, confide and share with each other. An older sibling can set standards of behaviour which the younger one tries to follow. However, in sibling relationships there is also conflict, domination, competition, rivalry and jealousy, and parents can play an important role in creating a bond between them.

Peers (similar age children) become increasingly important in the child's life as she/he grows. A detailed discussion about relationship and interactions with peers was undertaken in the chapter on 'School-peers and educators' in Unit II B of Part I. Among peers are close friends and not-so-close friends. Friendships with children similar in age with whom the child plays, fights and shares secrets contribute to her/his social and emotional development.

ACTIVITY 8

If you have a sister/brother, write down two qualities you like in her/him.

1. _____
2. _____

What does she/he like in you? Write two things.

1. _____
2. _____

Cognitive development

Cognitive development refers to the development of thought processes in children. 'Cognition', or thinking, is concerned with how we come to know the world around us, how we receive and interpret information and how we mentally represent the world around us. Let us first reflect a little on what are the various mental processes involved in thinking.

1. We **discriminate** between tastes, colours, shapes, living and non-living things, edible and non-edible things and one can keep adding to this list.
2. We **associate** certain emotions with certain experiences, certain people with a certain type of behaviour, certain weather with a particular month and certain belongings with certain persons.
3. Most of our actions are performed with an intention, with a purpose – we know that our actions will have an effect; in other words we understand **cause-effect relationships**.
4. When you change your route to reach your school because there is some obstruction in the route you normally take, or when we think of

an alternate way of handling a situation because the usual way is not successful anymore, we are showing the ability to **solve problems**.

We also **remember, imitate, reason** about the cause of things, **understand relationships** between objects, experiences and feelings, think and reason about hypothetical situations, and think in abstract terms (that is think about ideas and concepts that do not exist physically like ideas or emotions).

All these above-mentioned mental processes are a part of our thinking and the study of cognitive development is the study of the development of these and other mental processes from the time the child is born.

The stages in the development of cognition from the time the child is born till maturity have been studied and described in detail by Jean Piaget. According to him, children's cognitive processes develop in an orderly sequence or a series of stages. Some children may be more advanced than others at particular ages, but the developmental sequence does not normally vary. According to Piaget, cognitive development proceeds through four stages – sensori-motor, pre-operational, concrete operational and formal operational. We shall in this section, study some significant aspects of and changes in the child's thinking that take place from one stage to the next.

(a) The Sensori-motor stage: This stage of development lasts from **birth till two years of age**. During this period infants try to understand the world through their senses and through their motor capacities (i.e., actions) – therefore, the name sensori-motor period of development. Thus, infants understand the world on the basis of their actions on objects and people and how they appear to them. An infant girl knows a toy in terms of how it appears to her eyes and feels to her touch (sensory information) and that she can throw it, kick it, push it and bang it (motor actions). She does not yet understand the toy in terms of its properties as hard or soft, made of wood or metal, big or small, light or heavy – these are concepts and the infant does not yet have.

The child has many reflexes, including the **sucking reflex**. By **2 months** of age infants begin to show interest in things around them. By three months they begin to understand what the actions of others indicate – for example, a child understands that the mother will feed her/him by the specific gestures and actions the mother makes at the time of feeding. This also shows that the infant remembers. Between 4-8 months of age, the infant begins to understand that her/his actions can have an impact – for example, when she/he kicks her/his legs in the air, the ball moves, when she/he drops an object it makes a noise. This is the beginning of understanding cause-effect relationships. Between **8-12 months** of age, the infant begins to **intentionally carry out actions**. This means that she/he understands which action will have what effect and will be appropriate in a given situation.

Between **12-18 months of age**, the infant tries out different ways of doing things; she changes her actions to produce different results. A common example is that of an infant repeatedly throwing her toy to see how far it goes or to see the difference in noise when she throws it from different heights. Between **18 -24 months** of age an important development takes place – the infant begins to represent events, objects and people mentally – this means she is able to form an idea in her mind, a picture. This is called **mental representation**.

ACTIVITY 9

Can you think what these behaviours may be? Write your responses and compare with our discussion which follows.

On the basis of the above description would you not say that the infant is an intelligent thinking being?

- (b) **The Pre-operational period – 2-7 years:** The significant difference between this stage and the earlier one is that during this period, the child begins to develop concepts. She/he develops **preliminary concepts** of shape, space, size, time distance, speed, number, colours, area, volume, weight, of living, non-living, length, temperature – in fact, of everything that she/he sees in her environment. A three-year old child begins by first forming **an idea of long and short** in relation to two objects. Around **4 years of age**, she is able to understand longest, shortest when given three objects. However, even a 6-year-old is likely to get confused when you give her/him five sticks and ask her/him to arrange them in increasing order of height. This is because she/he cannot consider many objects simultaneously and think of relative size. This ability will develop in middle childhood years.

Similarly, with respect to the **concept of number**, the child does not at once develop a concept of one, two, three and so on. A 3-year-old child may be able to recite number names till 10 but ask her/him to pick up six stones from a pile and there are likely to be mistakes. The child in developing a concept of number first develops a concept of more and less, one and many, none and many/one, more than, less than, equal to and then gradually learns to count three, four, five objects and so on.

The characteristics of the preschoolers' thinking is best understood when we understand what is meant by the term 'pre-operational'. The word '**operation**' has a specific meaning in cognitive development. The term refers to **mental acts in which objects are changed or transformed and can then be returned to their original states**. This means that an action is reversible. For example, when you flatten a piece of clay, you can mentally turn it back into a ball of clay and, therefore,

you know that the amount of clay in the ball form and the flat form is the same. Obviously – you would say. But this would not have been so obvious to you when you were a 5-year-old! A preschooler's thinking is termed pre-operational because she/he cannot yet mentally reverse an action and so is dominated by what she/he sees rather than by the logic in the situation. Let us understand these characteristics of the preschooler-age child's thinking.

- (i) **Conservation:** This term means being able to understand that the amount of a certain substance remains the same even if its shape is changed or if it is transferred from one container to another. As an example, take two glasses of equal diameter and height and pour water in them to the same level. Then in front of the child pour water from one of these glasses into a third narrow glass; naturally the level of the water will rise higher in the narrow glass. A preschool child is likely to say that the water in the narrow glass is more because of the higher water level. This means that the child cannot yet **conserve**. However, it is also true that the child conserves in situations which are familiar to her/him but does not conserve in unfamiliar situations. For example, a 4-year-old child who helps her/his father in the daily business of making lemon soda to earn a living, is not likely to get confused that the amount of soda increases when it is poured from the bottle into the glass because this is her/his repeated experience. As the child approaches 6-7 years of age, she/he is able to conserve. We shall see that in the next stage.
- (ii) **Seriation:** This term means performing the task of placing things in a serial order. A common example would be arranging five pencils of different sizes in the order of longest to shortest or vice-versa. The preschool age child may place up to three pencils in the correct order (i.e., seriate them), be doubtful with the fourth one, and fail with the fifth pencil.
- (iii) **Taking another person's perspective:** At this stage the child centers on one aspect of the situation and cannot understand or visualise things from another person's perspective. If you hide a ball at a place where it is not visible to the child, but it is visible to another person standing at a different location in the room, the child is not able to make out that the other person is able to see the ball. The preschooler assumes that others see a situation as she/he does, and this quality of the child's thought has been called **egocentrism**. Once again, this is a general response – towards the end of preschool age the child may be able to see the situation from another person's perspective.
- (iv) **Animism:** Another interesting quality of thinking at this stage is that the children believe everything has life in it – this is referred

to as animism. Hence, when we tell them stories about trees and clouds that talk, they believe it to be true. Using these illustrations, it becomes evident that children do not 'suddenly' start thinking; thought is a process of gradual emergence of mental capabilities through the increasing coordination between the senses and the mind.

- (c) **The Concrete Operational stage – 7-11 years:** This stage corresponds to the stage of middle childhood. The child can now mentally **reverse performed actions**. Also, unlike the pre-operational child who can focus on only one dimension of a problem at a time, the concrete operational child can focus on multiple dimensions or aspects of a problem at the same time. Thus, the child will conserve or seriate under any situation or with any material. In the earlier example of pouring water into another glass, she/he can reason that when the water is poured from the wide glass to the narrow glass, the amount of water does not change because nothing was added.

The children at this stage are **less egocentric**. They see that different people can see the same event in different ways because of different situations and different sets of values. This understanding helps in the development of emotions in general, especially emotions of sympathy and empathy.

During this period the child develops a **stable number concept** – she/he understands how much quantity a particular number signifies and does not make errors in counting. She/he can understand that a particular object can belong to a number of different categories, depending on the criteria for developing categories. Thus, fruits can be classified as those with seeds and those without seeds; the same set of fruits can also be classified as fruits that grow in winter and those that grow in summer; and also on the basis of their taste. Thus,

ACTIVITY 10

On the basis of what you have read, talk to two children, one in the pre-operational stage and another in the concrete operational stage. Try out one conservation and one seriation experiment with them. Write the conclusion.

the same fruit would belong to different sets with each criterion of classification. The understanding of such classification abilities leads to the development of logic in adulthood.

- (d) **The stage of Formal Operations – 11-18 years:** The child enters this stage by 11-12 years of age – in fact she/he is no longer a child at this stage but an adolescent. All of you are in this important stage of formal operations.

The chief characteristic of this stage is that the adolescents' thinking is not tied to concrete events, objects and situations. They can think in terms of ideas – in other words, in abstract **terms**. The child had acquired reversibility of thinking in the earlier stage – now the adolescent can apply this ability to ideas too and think of multiple possibilities, which allows her/him to follow an argument from its inception to conclusion and back again. The adolescent discovers the world of the hypothetical – that which is not, but may be, and engage with the question “what would happen if....?” Because of this quality of the thought – of **hypothetical thinking** — adolescents are able to engage in elaborate fantasies, including ideas of changing the world. Their thinking is idealistic and utopian — they think of **idealistic** characteristics for themselves and others. They dream about changing the world for the better and become restless with the ‘slow’ pace they believe the older are moving with.

The adolescent's thinking becomes more **logical**, their reasoning becomes more **systematic** and they become more effective in **solving problems**. Instead of relying on trial and error learning they think of possible courses of action. This type of thinking has been called **hypothetico-deductive reasoning**.

Adolescents become more capable of examining their own thoughts and think about thinking – this is called **meta-thinking**. Thus, some typical thoughts are “why do I think the way I do?” “Today I want to reflect on my yesterday's thoughts”. Another feature of adolescent thought is that the young people create an **imaginary audience** and a **personal fable** about themselves. You will surely identify with these feelings. By imaginary audience, it is meant that adolescents believe that others are always looking at them, and believe that they are observing each and every action of theirs. This leads the adolescent to be very concerned about her/his physical appearance. The belief in personal fable implies that the adolescent believes what (pain/emotion) she/he experiences, no one else does, because she/he is different from all others, is unique.

At this point recall the discussion on the development of self that you read about in Unit I of Part I. Can you see how description of adolescent thinking abilities is reflected in the adolescents' formation of the sense of self and identity? The identity crisis that the adolescent goes through is the consequence of her/his thinking abilities in the period of formal operations.

This chapter acquainted you with the growth and development features of children during childhood, and the note of good nutrition in their growth. In the chapter that follows there will be a detailed discussion on how children's health and well-being can be maintained by following appropriate nutritional guidelines.

Key terms with meaning

Development: Sequential and orderly changes in various domains from the time the child is born. These changes, which are both qualitative and quantitative, lead to increased complexity in functioning.

Attachment: The bond of affection and love that develops in the first year of life between the infant and the adult who primarily looks after her. This adult, in most cases, is the mother.

Bonding: Development of the bond of attachment between the child and the adult

Child rearing practices: The ways and methods parents use to bring up their children and teach desirable and appropriate values and behaviours.

Permissive parents: When parents impose very few rules on children and leave the children to take their decisions themselves.

Restrictive parenting: When parents impose many rules, are very strict and give only a little freedom to children to make their own choices.

Egocentrism: The assumption that everyone perceives a situation as one sees it or that everyone thinks in the same way as one does.

Abstract thinking: The ability to think of situations or objects even when they are not happening at that time or are not present before one eyes.

Meta thinking: Self reflection of one's thinking process; examining why one thinks the way one does; thinking about the process of thinking

■ REVIEW QUESTIONS

1. Differentiate between growth and development. Giving examples, define the various areas of development.
2. What conditions and resources are required to promote the healthy growth of the child from the time she is born till she completes adolescence?
3. Would you say that the neonate is helpless? Give reasons in support of your answer.
4. Describe the sequence of motor development from birth till 10 years of age.
5. Explain how infants form attachment with the caregivers in the first year of life.
6. Differentiate between the power-oriented and affection-oriented approach to disciplining. In your opinion which is a better approach and why?
Or
Describe the child rearing practices that will contribute to shaping an all round personality in children.
7. Describe the major characteristics of each of the following stages of cognitive development.
 - Sensori-motor stage
 - Pre-operational stage
 - Concrete operational stage
 - Formal operations stage

■ PRACTICAL 12

Survival, Growth and Development

- Theme:** Visit to a programme or institution for children to observe its activities
- Tasks:**
1. Visit to an institution or programme for children (Government/NGO)
 2. Observation of activities of the institution or programme
 3. Writing a report based on your observations

Purpose of the practical: Across the country, there are many organisations run by government and non-governmental organisations, that carry out various activities for children in their community. The services they provide range from health, education, nutrition, recreation and leisure activities. Each organisation has specific objectives. The organisation identifies the services to be provided and the age group of the children to whom they will provide these services on the basis of their objectives. Through this practical you will become familiar with the working of one such organisation in your community.

Conduct of practical

1. Make groups of 10 students each and identify a programme being run for children or an organisation working for children in your community with the help of your teacher. The teacher will also help you to seek permission to visit the organisation for one or two days so that you can find out about the activities of the organisation or the programme. You may need to carry a letter from your school so that the organisation permits you to observe their activities. (It is also possible that the entire class visits a programme/institution together if it is a large programme/institution).
2. Try to get some information about the activities of the organisation/programme before you visit the institution. This will give you some idea about what to observe when you visit and the type of questions you can ask the workers in the organisation to know about its activities.
3. Carry a note pad with you so that you can record briefly what you will observe during your visit.
4. During your visit you have to collect information regarding
 - Name of programme/organisation; NGO/government
 - Objectives/goals of the organisation/programme
 - Age group of children covered by the institution/programme
 - Activities of the organisation/programme
 - Workers/functionaries at the organisation and their roles
 - Source of funds for the organisation

This information may be collected by asking (interviewing) the workers at the institution or from a brochure or write-up available at the organisation.

When collecting information about the activities of the organisation, you should actually observe some activities as they are being carried out at the organisation/programme. For example, if the organisation provides early childhood education services, spend an hour observing how the preschool teacher/ *anganwadi* worker is carrying out activities with children. Or if the health check-ups are being carried out, sit in that area and observe how this activity is done. Remember not to interfere in the activities that are being carried out at the organisation/programme.

5. Write a report of your visit in about four pages providing information under the various aspects we have stated in point no. 4. The last part of your report should be titled 'Conclusion' where you briefly state your opinion about the organisation/programme and its activities.

ADDITIONAL ACTIVITY

Survival, Growth and Development

Read the following extract carefully and discuss the issues raised in a group of 2-3, then, answer the questions which follow.

The **Human Development Index (HDI)** is an index which combines:

- life expectancy,
- literacy,
- educational attainment, and
- GNI per capita.

Human development is a concept that, according to the United Nations Development Program (UNDP), refers to the process of widening the options of persons, giving them greater opportunities for education, health care, income, employment, etc. The basic use of HDI is to rank countries by level of 'human development' which usually also implies to determine whether a country is a developed, developing, or underdeveloped country.

As UNDP states: Human Development is a development paradigm that is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests. People are the real wealth of nations. Development is thus about expanding the choices people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means — if a very important one — of enlarging people's choices.

Fundamental to enlarging these choices is building human capabilities — the range of things that people can do or be in life. The most basic capabilities for human development are to lead long and healthy lives, to be knowledgeable, to have access to the resources needed for a decent standard of living and to be able to participate in the life of the community. Without these, many choices are simply not available, and many opportunities in life remain inaccessible.

Now let us try to understand the meaning of the following important terms as used in the context of the human development index.

Life expectancy is the average number of years of life expected at birth. The traditional definition of **literacy** was considered to be the ability to read and write, or the ability to use language to read, write, listen, and speak. In modern contexts, the word refers to reading and writing at a level adequate for communication, or at a level that lets one understand and communicate ideas in a literate society, so as to take part in that society.

Educational attainment is a term commonly used by statisticians to refer to the highest degree of education an individual has completed. In the context of calculating HDI, the two parameters which have been used for measuring in educational attainment are the expected years of schooling and mean years of schooling.

The **gross national income (GNI)** is one of the measures of national income and output for a given country's economy. GNI is defined as the aggregate income of an economy generated by its production and the income it receives from overseas with respect to the given midyear population of the country.

The term **developed country**, or **advanced country**, is used to categorise countries with developed economies in which the tertiary and quaternary sectors of industry dominate. Countries not fitting this definition may be referred to as developing countries. The **tertiary sector of economy** (also known as the **service sector** or the **service industry**) is one of the three economic sectors, the others being the secondary sector (approximately manufacturing) and the primary sector (extraction such as mining, agriculture and fishing). Sometimes an additional sector, the "quaternary sector", is defined for the sharing of information (which normally belongs to the tertiary sector).

This level of economic development usually translates into a high income per capita and a high Human Development Index (HDI). Countries with high gross national income (GNI) per capita often fit the above description of a developed economy. However, anomalies exist when determining "developed" status by the factor GNI per capita alone.

Developing countries are in general countries which have not achieved a significant degree of industrialisation relative to their populations, and which have, in most cases a medium to low standard of living. There is a strong correlation between low income and high population growth.

The HDI provides a composite measure of three dimensions of human development: living a long and healthy life (measured by life expectancy), being educated (measured by expected years of schooling and mean years of schooling) and having a decent standard of living (measured by purchasing power parity, PPP, income). The index is not in any sense a comprehensive measure of human development. It does not, for example, include important indicators such as gender or income inequality and more difficult to measure indicators like respect for human rights and political freedoms. What it does provide is a broadened prism for viewing human progress and the complex relationship between income and well-being.

The table below shows the HDI value for India along with other countries according to the Human Development Report, UNDP 2017.

Table 1: India's Human Development Index 2017						
Rank	Country	Human Development Index (HDI) Value	Life expectancy at birth (years) SDG3	Expected years of schooling (years) SDG 4.3	Mean years of schooling (years) SDG 4.6	Gross National Income (GNI) per capita (PPP\$) SDG 8.5
1	Norway	0.953	82.3	17.9	12.6	68012
2	Switzerland	0.944	83.5	16.2	13.4	57625
3	Australia	0.939	83.1	22.9	12.9	43560
130	India	0.640	68.8	12.3	6.4	6353
136	Bangladesh	0.608	72.8	11.4	5.8	3677
150	Pakistan	0.562	66.66	8.6	5.2	5311
182	Mali	0.427	58.5	7.7	2.3	1953
189	Niger	0.354	60.4	5.4	2.0	906

Source: <http://hdr.undp.org/en/2018-update>

Now, answer the following questions–

1. How would you describe the concept of 'human development'?
2. How would you define a developing country? How does India qualify to be a developing country?
3. Compare India's rank with that of other countries mentioned in Table 1 on each of the measures used to calculate HDI.
4. Compare India's rankings on each of the indices/measures mentioned in Table 1. Which is the measure on which India has the lowest ranking? Which is the measure on which India has the highest ranking?



11137CH12

NUTRITION, HEALTH AND WELL-BEING

12

LEARNING OBJECTIVES

After completing this chapter the learner is able to–

- describe the nutritional needs of children at different stages of development.
- make suggestions for planning balanced meals for children
- discuss food habits of children.
- identify important health and nutrition related problems of children.
- describe the immunisation schedule.

12.1 INTRODUCTION

Do you remember learning about food and nutrition in Chapter 5? You also learnt about aspects of survival, growth and development of children in the previous chapter? Let us go over some important points again, briefly. Our diet is made up of the foods we eat. Nutrition is “food at work”, a process by which we obtain nutrients and metabolise them for growth, repair and well-being. When we talk of nutrition we need to understand the composition of foods and to know which food provides what nutrients.

Let us now focus on nutrition, health and well-being of children.

Children grow continuously and so their nutritional needs depend on their rate of growth, body weight, and on how effectively the nutrients are utilised at each stage of their development. Since physical and mental development takes place very rapidly in children, nutritional deficiency at this stage can result in lifelong impairments and disabilities. On the other hand, adequate nutrition ensures that the children grow to their full potential. We, therefore, need to understand the art of balancing their

food intake while enjoying variety of foods from all the food groups. It is generally believed that good nutrition is reflected in height and weight gained by children, but effectively it improves and maintains their well being in totality. Adequate nutrition contributes towards–

- functions of the organs and systems of the body.
- cognitive performance.
- body's ability to fight diseases and restore healing.
- increase in energy levels.
- develop pleasant and positive attitude.

12.2 NUTRITION, HEALTH AND WELL-BEING DURING INFANCY (BIRTH-12 MONTHS)

Infancy is marked by rapid growth; and changes especially during early infancy (birth–6 months) are phenomenal. In fact, it is known that infants require twice as many calories per kg of body weight as required by an adult doing heavy work. It is possible to fulfil this requirement through adequate nutrition. Besides energy, children should get:

Protein - For muscular growth.

Calcium - For healthy bones.

Iron - For growth and expansion of blood volume.



DID YOU KNOW?



In infants–

- Weight—doubles in 6 months, triples in 1 year
- Length—50-55cm at birth increases to 75 cm by 1 year
- Head circumference and chest circumference both increase.

Dietary requirements of infants

Infants are able to regulate their needs by consuming more milk or less milk. Their nutritional requirements are met through the composition of breast milk and contributions from complementary foods given to them.

The recommended nutrients are computed on the basis of composition of mother's milk. An average secretion of 850 ml of breast milk of a well-nourished mother should provide all the nutrients for the first 4–6 months. The baby thrives well if the mother is well nourished. She must, therefore, eat a diet rich in protein, calcium and iron and consume adequate quantities of fluids like milk, soups, fruit juices, and even water to avoid malnutrition.

Table 1: Recommended Dietary Allowances for Infants

Recommended by ICMR*		
Nutrient	Birth to 6 Months	6-12 Months
Energy (Kcal.)	108 / kg body weight	98 / kg body weight
Protein (gm)	2.05 / kg body weight	1.65 / kg body weight
Calcium (mg)	500	500
Vitamin A Retinol (µg) Or Beta Carotene(µg)	350 1200	350 1200
Thiamine (µg)	55 / kg body weight	50 / kg body weight
Niacin (µg)	710 / kg body weight	650 / kg body weight
Riboflavin (µg)	65 / kg body weight	60 / kg body weight
Pyridoxine (µg)	0.1	0.4
Ascorbic Acid (µg)	25	25
Folic Acid (µg)	25	25
Vitamin B12 (µg)	0.2	0.2

* Indian Council of Medical Research (ICMR), 2010

Breast feeding

Mother's milk is nature's gift to the newborn baby. It is enriched with all the required nutrients which are easily absorbed. WHO recommends exclusive breast feeding for six months. During breast feeding even water is not required. Babies should be put on breast milk soon after birth. During the first 2–3 days a yellow coloured fluid known as **colostrum** is produced. Babies must be fed on it as it is very rich in antibodies and protects a child from infections.



Benefits of breast feeding

- It is nutritionally tailor-made for meeting the infant's nutritional needs.
- It is enriched with all the nutrients in required proportion and form (e.g., the fat present is emulsified). Its low amount of protein reduces pressure on the kidneys and Vitamin C is also not destroyed.
- It is a simple, hygienic and convenient method of feeding both for the mother and the child. Milk is available at all times and at the right temperature.

- It protects babies from gastro-intestinal, chest, and urinary infections due to the presence of antibodies in it giving it natural immunity, and it is free from allergens.
- It gives protection to mothers against breast and ovarian cancers, and also from developing weak bones.
- It is very conducive for a healthy, happy emotional relationship between the mother and the child.

Babies know when and how much they want and so the “best clock is baby’s hunger”, though efforts must be made towards regularising the feeding intervals, after a baby reaches one month of age.

Feeding the low birth weight infant

You may know that some children are born low in body weight. A baby weighing less than 2.5 kgs at birth is considered as low birth weight. The problems facing such babies are that they have poor sucking and swallowing reflexes. Their absorption capacity is also very low because of the small size of their stomachs and intestines, but they have a relatively high calorie requirement. Breast milk produced by their mothers has all the essential amino acids, calories, fat and sodium content. It meets all their requirements. Anti-microbial property of their mother’s milk protects them from infections.

So, undoubtedly, mother’s milk is the best food for low birth weight babies. Simultaneously, they require vitamins, calcium, phosphorus, and iron to promote steady growth. Dietary supplements should be considered only if the baby does not gain weight satisfactorily.

Complementary foods

Complementary feeding is the process of gradually introducing other foods along with breast milk. Foods that are introduced are thus called complementary foods. These can be introduced by 6 months of age. It is important that in the process of complementary feeding good hygienic conditions must be maintained when using feeding bottles and utensils to avoid infection to the baby.

In order to ensure the fulfilment of nutritional needs of infants,



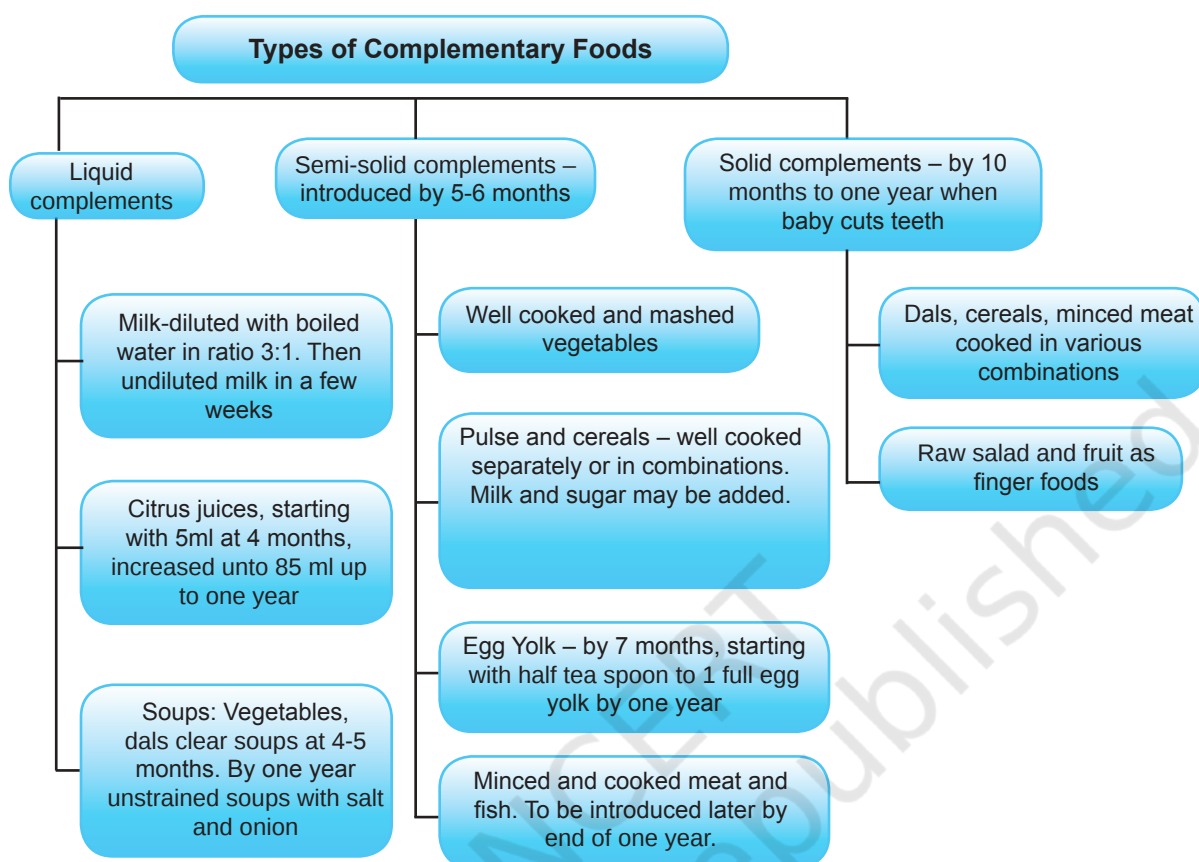


TABLE 2 : TYPES OF COMPLEMENTARY FOODS

complementary foods should be calorie-dense and should provide at least 10 per cent of energy as proteins.

Some low cost complementary foods

- Indian multipurpose flour – low fat groundnut flour and bengal gram (75:25)
- Malt food – cereal malt, low fat groundnut flour and bengal gram (4:4:2)
- Balahar – whole wheat, groundnut and bengal gram flours (7:2:2)
- Win food – pearl millet, green gram dal, groundnut and jaggery (5:2:2:2)
- Poshak – cereal (wheat/maize/rice/jowar) pulse (*chana*/green gram), groundnut and jaggery (4:2:1:2)
- Amutham – rice, ragi, bengal gram and sesame, groundnut flours and jaggery (1.5:1.5:1.5:2.5:2.5)
- Amritham – wheat, bengal gram, soya and groundnut flours and beet sugar (4:2:1:1:2)

All these foods are prepared from locally available cereals which are roasted and mixed in relevant proportions as shown, seasoned and fortified with vitamins and calcium.

They are very nutritious and can be easily prepared at home.

Guidelines for complementary feeding

- Only one food should be introduced at a time.
- Small quantities should be fed in the beginning which can be gradually increased.
- Do not force if the child dislikes any food. Try something else and re-introduce later.
- Spicy and fried foods should be avoided for small babies.
- All types of food should be encouraged without showing personal dislikes.
- Variety in foods is very important to make new foods acceptable.

ACTIVITY 1

Ask your parent/grandparent/aunt about the traditional complementary foods of your region. Do you think these foods are nutritious? Give reasons for your answers.

Immunisation

Good health and well-being are not entirely dependent on good nutrition. We all are aware of the role of immunisation in protecting children from various diseases.

You may be interested in knowing how immunisation protects children from diseases. A vaccine that contains an inactive form of a bacterium/virus/toxin made by the germ is injected in the child. Being inactive it does not cause infections but induces white blood cells to produce antibodies. These antibodies then kill the germs when they attack the child's system.

**Table 3: National Immunisation Schedule
(Recommended by ICMR)**

Age of the child	Vaccine
Birth	BCG, OPV, HEP B
6 weeks	OPV, PENTA (DPT, HEP B, HiB)
10 weeks	OPV, PENTA (DPT, HEP B, HiB)
14 weeks	OPV, PENTA (DPT, HEP B, HiB)
9 months	MR (Measles, Rubella)

1. BCG-Bacillus Calmette-Guerin (anti TB)
2. OPV-Oral Polio Vaccine
3. DPT-Diphtheria, Pertusis and Tetanus
4. HEP B- Hepatitis B
5. Hi B- Haemophilus influenza type b bacteria

Source: *National Immunisation Schedule, Government of India*

Common health and nutrition problems in infants and young children

We have learnt in Chapter X in Part I how malnutrition and infections are interrelated. In fact malnutrition is a national problem. It is a consequence of several factors such as illiteracy, poverty, ignorance about nutritional needs of children, and poor access to health care, especially in rural and tribal areas.

Children begin to be malnourished when breast milk is no longer available in adequate amounts and they continue to remain so till they can make full use of the family diet. During this period incidence of diarrhoea is very common in infants. It results in depletion of water and electrolytes from the body and this condition is a major cause of infant mortality. Research evidence favours the view that nutritional factors play a role in causation of tuberculosis particularly in populations subjected to food shortage. Primary herpes simplex is another infectious disease which affects children if they are suffering from malnutrition at the same time.

Nutritional deficiency diseases may set in at this stage if the infant is not exclusively breast fed and when complementary foods do not meet the nutrient needs of infants. Let us list the important deficiency diseases that may occur in childhood precisely

- Protein Energy Malnutrition (PEM): leads to growth retardation and infections leading to diarrhoea and dehydration
- Anemia : caused due to iron deficiency
- Nutritional blindness : results due to vitamin A deficiency
- Rickets and osteopenia are bone-related : due to shortage of vitamin D and calcium
- Goitre (enlargement of the thyroid gland) : due to deficiency of Iodine

Much of the major effects of nutrition on communicable diseases have already been focussed in the previous chapter. The six dreaded communicable diseases namely polio, diphtheria, tuberculosis, pertussis, measles and tetanus compound the incidence of mortality and morbidity, more so in developing countries like India. The low age of attack is one more factor responsible for high fatality. The problem worsens when infection and malnutrition co-exist in the same infant. Immunisation given at different stages of the first year of life gives life-long immunity to children against communicable diseases.

In rural and tribal areas, factors such as poor access to health centres, climatic conditions, certain local customs, and use of untested traditional methods of treatment increase the child's susceptibility to infectious diseases. There is need to inform people about the health hazards of contaminated food, poor environmental sanitation and inadequate personal hygiene and their role in causing communicable diseases.

CHECK YOUR PROGRESS

- What do DPT, OPV and BCG vaccines stand for?
- How does diarrhoea result in dehydration?
- Why is the mother's health and nutrition important to avoid deficiency diseases in infants?
- Classify complementary foods.

12.3 NUTRITION, HEALTH AND WELL-BEING OF PRESCHOOL CHILDREN (1-6 YEARS)

Preschoolers, as you all know are very energetic, active and spirited. The rapid growth of infancy is comparatively slowed down now. But the child is very active. There continues to be physical, mental and psychological development.

Preschoolers are still developing their eating habits and working on chewing and swallowing skills. It is, therefore, an excellent time to help the child become familiar with eating healthy meals and snacks. Healthy eating habits formed during these years are likely to be reflected in their food behaviour later on.

Nutritional needs of preschool children

Basic nutritional needs of preschoolers are similar to the nutritional needs of other members of the family. The amounts needed differ because of age, height, current weight and health status, and also their activity level. There is also an increased demand for energy to support growth and development.

Table 4: Recommended dietary allowances for preschool children

(Recommended by ICMR), 2010		
Nutrient	Age in years: 1–3 years	Age in years: 4–6 years
Energy(Kcal)	1240	1690
Protein(g)	22	30
Fat(g)	25	25
Calcium(mg)	400	400
Iron(mg)	12	18
Vitamin: Retinol(µg)	400	400
Or Beta-carotene(µg)	1600	1600
Thiamine (mg)	0.6	0.9
Riboflavin (mg)	0.7	0.1
Niacin (mg)	8	11
Vitamin C (mg)	40	40
Pyridoxine (mg)	0.9	0.9
Folic Acid (µg)	30	40
Vitamin B-12 (µg)	0.2-1	0.2-1

It is important to note here that because of basal losses and additional requirements, needs may vary a little from child to child.

Guidelines for healthy eating for preschoolers

We know that like many other habits the child should also develop good food habits early in life. In order to teach them that “healthy eating is part of healthy life style” one can follow the suggestions given below–

- Mealtime can be a family time. Eating together as a family in a pleasant and enjoyable atmosphere helps children. Children learn by imitating the eating behaviour of other members of the family.
- Variety is one of the important aspects and hence offering a choice of foods in child size portions is important. The child should be taught to finish everything on the plate. At the same time give them enough time to finish.
- There should be regularity in mealtime and snack time so the child gets properly hungry.
- Put new items on the menu along with the child’s preferred foods. A balance between hard, soft and colourful foods should be maintained to stimulate interest.
- Menus must include dishes which are easy to handle and eat, like in the form of finger foods such as small sandwiches, *chapatti* rolls, small size *samosas/idlis*, whole fruit or hard boiled eggs.
- Serve meals at one place and not when the child is walking around. You may want to select suitable seating arrangements for the physical comfort of the child.
- Above all, have the child rest before meals. A tired child may not be interested in eating.
- It is suggested that never ever bribe or punish the child to eat and finish certain foods. It is injurious to building healthy food habits.

Planning balanced meals for preschool children

An active preschool child’s energy needs rival those of some grown up women. So we need not track their calorie consumption. But given the velocity of growth and activity, if the child is denied of nutritious balanced meals, she/he may not achieve her/his full genetic potential for adult height. It may affect the health also. Children suffer from Protein-Energy Malnutrition (PEM), xerophthalmia (vitamin A deficiency) and anaemia if protein, vitamin A and iron respectively are lacking in their meals. Universal use of iodised salt is a simple and cheap method of preventing Iodine Deficiency Disorders.

The diet of a preschool child should emphasise three aspects–

- **Variety** in textures, tastes, smells and colours, to broaden a child’s nutritional intake and eating experience,

- **Balance** of complex carbohydrates, lean proteins and essential fats,
- **Moderation** while indulging in sweets, ice creams, fast foods rich in fats and refined flours.

Now do you remember the five food groups you learnt in Chapter III in part I? The five food groups suggested by ICMR permit us to plan balanced meals according to our recommended dietary allowances. While planning daily diets foods must be chosen from all the food groups. In order to make planning more convenient, ICMR has suggested diets for different age groups. We could refer to Table 5 below for the quantities of various food groups to be included in a balanced diet for preschool children.

Table 5: Balanced Diet for Preschool Children			
(Recommended by ICMR), 2010			
S.No.	Food Groups	Quantity (gm)	
		1–3 years	4–6 years
1.	Cereals and Millets	60	120
2.	Pulses	30	30
3.	Milk (ml)	500	500
4.	Fruits and vegetables		
	Roots and tubers	50	100
	Green leafy vegetables	50	50
	Other vegetables	50	100
	Fruits	100	100
5.	Sugar	15	25
	Fats/Oils (visible)	20	25

Now we should be able to plan three meals and two snacks for a preschool child. You may be wondering why snacks. Because it is hard for the preschoolers to eat enough in three meals, healthy snacks in between meals provide the calories and nutrients they need. Besides snack time is a good time to introduce new foods. Snacks also go well in school tiffin.

Let us look at a situation and analyse how we can plan snacks and meals for a preschooler.

The parents of a six years old child can plan and prepare the following meals for a day–

Breakfast: Wheat porridge cooked in milk/bread or *roti*, egg and seasonal fruit.

School tiffin: Sandwich with vegetable filling and a healthy drink.

Lunch: Vegetable/*paratha/roti*, rice, curd, boiled *channa* and salad.



Evening snack: Milk, biscuit/peanuts and fruit.

Dinner: *Chapati*/rice, dal/chicken, cooked seasonal vegetable and salad.

Now how do you rate the parent's attempt to plan and serve balanced meals to the child?

Snacks served to the children in the different regions include items such as *murukku*, *laddoos*, *upma*, *mathi*, *chana-chur* which are traditional preparations and are nutritious. The high activity levels of children increases the energy needs and hence such snacks may be useful in providing enough calories to meet their needs.

Some examples of low cost snacks

- Equal amounts of *soya bean dal* and sunflower seeds are ground, mixed and fermented together.
- Sweet *chikki* (like traditional peanut *chikki*) has great acceptability in rural and semi-urban areas of India.
- Indigenous foods such as flours of rice, cow pea, horse grain and amaranths, jaggery are mixed in equal amounts with ground nut oil to prepare various snacks.
- *Sundal*, *Payasam*, *Dhokla* and *Upma* are popular snacks.
- Vegetable soup prepared from seasonal and locally available vegetables. Even leftover vegetables, dals and cereals can be added.
- Spiced baked potatoes.
- *Chiwrha (poha)* prepared from rice, wheat or maize flours or other products and stuffed with seasonal vegetables can be served with sauce.

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ACTIVITY 2

You are asked to take care of a four-year-old child for a day from 10 am to 6 pm. Keeping a balanced diet in mind suggest what you will serve to her/him for meals and snacks.

Feeding children with special needs

Feeding children with special needs often poses challenges at mealtimes. While helping them with feeding and other nutritional issues, three main aspects have to be taken into account–

Observations: Closely observe the child's behaviour and progress at mealtimes. Observe their abilities to handle food, food preferences, allergies and any specific condition. Promote and help them develop the skill they need to get adequate nutrition and experience pleasant mealtimes.

Developing eating skills: Children with disability are likely to require more time to eat. They often struggle to feed themselves and make bigger messes. Focus on positive reinforcement to keep them motivated and prevent resistance.

Make sure the child is seated comfortably and avoid feeding her/him if she/he can do it himself. Help them develop self-feeding skills.

Allow the child to eat increasingly challenging textures as she/he progresses. Adaptive equipment may be used if needed.

Respect the child's food preferences, eating space and whether or not she/he chooses to eat. Try and set regular feeding timings.

Special diets: Some of the children may require modifications in their diets and mealtime routine depending on their ability. Spastic children may struggle with different food textures. Thin liquids may be thickened and dry or lumpy foods can be chopped or softened to make it easier for the child to swallow. A feeding tube may be used if required.

Some children with disability have a tendency to be overweight making eating difficult. Children with autism have an altered sense of taste or smell affecting their acceptance of food. Depending on their choices extra fat, limited liquids, special formula or other dietary changes may be needed.

All foods to which a child with special needs is allergic should immediately be removed from her/his diet as it may cause damage.

Immunisation

Some more vaccinations in combating communicable diseases are due now. Refer to Table 6 below and note that the preschool child is now due for measles, mumps and rubella (MMR) and Typhoid Vaccines besides booster doses of DPT and OPV.

Table 6: Immunisation schedule	
Age of Child	Vaccine
15–18 months	MMR (for measles, mumps and rubella)
16 months–2 years	DPT, OPV-booster doses
2 years	Typhoid Vaccine
5 years	DT
10 years and 16 years	Tetanus Toxoid (TT)
18,24,30,36 months	Vitamin A (drops)

CHECK YOUR PROGRESS

1. How many Kcal of energy is required by a four-year-old child?
2. What is the importance of iodine, iron, calcium and protein in the diet of preschool children?
3. Which are the three aspects to be taken into account while planning diets for preschoolers?
4. Why are snacks important in a preschooler's diet?
5. What is MMR vaccine for?

12.4 HEALTH, NUTRITION AND WELL-BEING OF SCHOOL-AGE CHILDREN (7-12 YEARS)

School age children too are extremely active physically. With the incidence of communicable diseases out of the way, the child is now quite strong. You may notice that the growth pattern is rather slow now. Instead body changes occur gradually, especially from 9 to 10 years onwards, when boys and girls show different growth patterns.

Nutritional requirement of school children

Though it is a latent period of growth there are several activities to pack in the child's day now. Retaining her/his energy is therefore very crucial. Nutritional requirements are the same for both boys and girls upto the age of 9 years after which there is a change in some of the nutrient requirement for boys and girls. You may recall that the energy requirements for girls remain almost the same throughout but they need increased amounts of protein, iron and calcium to help bone growth and preparation for menarche. Boys of 10-12 years need enough calories to maintain adequate reserves for the spurt in their growth during adolescence.

Table 7: Recommended Dietary Allowances of School Age Children (7-12 Years)

(Recommended by ICMR)			
Nutrients	Age (in years)		
	7-9	10-12	
		Boys	Girls
Energy (k. cal)	1690	2190	2010
Protein (g.)	29.5	39.9	40.4
Fat (g.)	30	35	35
Calcium (mg.)	600	800	800
Iron (mg)	16	21	27
Vitamin A			
Retinol (µg) OR	600	600	600
B Carotene (µg)	4800	4800	4800
Thiamine (mg)	1.0	1.1	1.0
Riboflavin (mg)	1.2	1.3	1.2
Pyridoxine (mg)	1.6	1.6	1.6
Folic acid (µg)	120	140	140
Ascorbic acid (mg)	40	40	40
Vitamin B12 (mg)	0.2-1	0.2-1	0.2-1
Niacin (mg)	13	15	13

Planning diets for school-age children

Following all aspects and guidelines of diet planning for preschool children, it may appear that by school age the children establish a particular pattern of food intake. To an extent you are right but planning balanced meals for school children may differ in other aspects. Let us discuss these briefly.

Aim for variety: We know that no single food can provide all the nutrients in the amount the child needs every day. The most consistent nutrition message therefore is to eat a variety of foods. Variety also increases the likelihood of accepting new foods.

Ensure good nutrition: We know that children at this age need more protein, calcium, iron and iodine. They must be encouraged to eat vegetables, fruits, whole grains. Fruits and vegetables improve the macronutrient density in their diets and whole grains reduce the risk of diseases like cardiovascular and diabetes. Iodised salt, as mentioned earlier, is the easiest way to avoid iodine deficiency.



Limit intake of saturated fat, salt and sugar: You know that the growth of school children has now slowed down. Maintain fat calories to 20 per cent of total calories. Diets rich in fats and sugars increase the risk of obesity and its related problems. Foods with added sugars are also a cause of dental caries. A high sodium intake may increase blood pressure leading to major risk factors of stroke, kidney and coronary diseases. Do you know that young children are frequently falling prey to diabetes and high blood pressure now-a-days?

Ensure eating breakfast: Breakfast is a special meal. It should contain more of protein and energy. After the long night's fasting the child should never be allowed to skip breakfast. Skipping breakfast will negatively affect her/his physical and mental performance, and the loss of calories and nutrients cannot be made up later in the day.

Involve children in meal planning: As children grow older they can be involved in planning their meals. It will make healthy eating interesting for them. Amrita has an 8-year-old son and 10-year-old daughter. She talks to them about making choices and planning balanced meals. She even takes them along to buy ingredients, at the same time she teaches them what to check while buying raw food material. Don't you think she makes the task of serving them nutritious meals attractive? Besides, encourage children in age- appropriate tasks of cooking their meals, and serving. They often get excited and develop healthy and positive concepts of food.

Besides following the guidelines for planning balanced diets you may refer to Table 8 for the quantities of foods to be consumed by school going children as recommended by ICMR:

Table 8: Balanced Diet for School Going Children (ICMR), 2010				
S.No.	Food Groups	Quantities (g)		
		7-9 years	10-12 years	
			Boys	Girls
1.	Cereals and Millets	180	300	240
2.	Pulses and Legumes	60	60	60
3.	Milk and products	500	500	500
4.	Fruits and vegetables			
	Roots and Tubers	100	100	100
	Green Leafy Vegetables	100	100	100
	Other Vegetables	200	200	200
	Fruits	100	100	100
5.	Sugars	20	30	30
	Fats	30	35	35

Amrita and Ankit very particular about serving three balanced meals and two healthy snacks to their **school age children**. Let us view the diet plan prepared by them for their children for today. You can use it as cross reference.

- **Breakfast:** Milk and cornflakes, *Rawa upma* and an apple or any seasonal fruit
- **School Tiffin:** Grilled sandwich with egg filling for their daughter but *paneer* filling for the son (who is allergic to egg) and a seasonal fruit.
- **Lunch:** Vegetable *pulao*, tomato rings and cucumber sticks for salad and butter milk.
- **Evening Snack:** Boiled potato and *moong sprout chaat*.
- **Dinner:** Bengal gram *dal* or chicken curry, okra and onion vegetable, *chapati* and raw salad.

In rural areas the breakfast may consist of items such as *upma* (with banana), *pootu* (with *chana* curry or banana), *idli* or *dosa* (with *sambar*/coconut chutney) or *appams* (with potato/chicken curry) in the south or *paranthas* with buttermilk or *poori* with potato preparation in the north. Snacks may include items prepared from rice flour with a filling of jackfruit and a paste of nuts or rice flour extruded from a mould in thin strands – both items being steamed. *Murukku* is another item that can be served as a snack for older children. In tribal areas emphasis is placed on foods gathered from the forest such as nuts, berries and other fruits/flowers obtained from trees. Lunch and dinner can consist of *chapattis* and rice, a pulse/*dal* preparation and a vegetable preparation.

ACTIVITY 3

Suppose you have a 9-year-old sister and an 11-year-old brother, and both are vegetarian. Suggest what you will serve them for breakfast and dinner.

Factors that influence diet intake of preschool-age and school-age children

Despite all the planning and preparation of the child's meals, chances are that the younger child is missing out on some vital nutrients. Do you know why? Because children are in the process of developing their eating habits and many factors are influencing these habits. These are discussed below.

Family environment: Put simply, families that use positive parenting practices encourage total well-being of children. We generally observe that with or without conscious effort the family guides and shapes the food preferences and establishes the food patterns of their school children. Parents should therefore acquire proper nutritional knowledge and incorporate it into planning diets for their children. Eating together in a comfortable and happy atmosphere is conducive to good eating habits and nutrient intake.

Media: TV commercials and their favourite film stars endorsing the products have very strong influence. More exposure, more independence and above all more understanding of the catchy slogans tempts children of this age. Attracted by the messages conveyed by commercials they insist on foods which are low in fibre, and high in sugar, fat and sodium. Similarly, an attractive display of foods with harmful additives during festivities influences their between meals snacking which in turn lessens their appetite for proper meals. A conducive family environment would help to combat this issue.

Peers: As the child enters school, there is a change of dependence from parental standards to those set by the peer group. So food intake may differ from what is followed at home due to peer influence. Adequacy in terms of nutrients does not depend on what food is available to children of this age but on what their friends eat. Children usually eat well in the company of friends. The tiffin given for school is often finished. When they eat along with their peers, they are willing to eat new foods which they otherwise refuse. In order to promote a positive attitude towards good food habits in preschoolers it is best to have group settings.

Socio-cultural Influences: Every region has its typical foods and flavours. The family usually serves the same food to young children that

adults eat. Eating with the family encourages children to like foods typical of their own region, and also of other regions. As an example, children in the north of India enjoy eating southern dishes such as *idlis* and *dosas* with relish, while children in southern states like *parathas* and *rajma*-rice of the north.

Erratic Appetite: You may notice that the child may eat one meal well while refusing the next altogether. This should not be worrying because these are temporary moods and disappear if not reinforced by bribes, punishments or rigid rules.

Healthy habits

Now you can understand that **good health is a blend of physical and emotional well-being**. Besides adequacy of food in terms of nutrients, school children need to develop some **healthy habits**–

- **Establish sensible eating habits:** Children at this age sometimes turn into munching machines glued to the TV and having no physical activity. Radha has an innovative solution for a situation like this. She prepares a bowl of fruit and vegetable salad with lots of lettuce leaves, some nuts/sprouts/boiled chick peas/steamed beans or carrots/tofu or paneer chunks, adds some interesting dressing and serves this in plenty. She keeps changing the combinations giving them fancy names.
- **Encourage physical activity:** Healthy eating and physical activity go hand in hand with moderate activity of 45–60 minutes promotes good health. Limit television watching and encourage sports. Children should be encouraged to take part in extracurricular activities of school and community. Parents have to be a model on active lifestyle and healthy eating patterns.
- **Ensure food safety:** Children should be trained to eat under hygienic conditions. Food consumed should be clean and safe before eating. They must wash their hands, fruits, and vegetables before eating. My neighbours Kanta involves her children in washing, cutting, mixing and cooking (under her supervision). It has become their habit to prepare and eat food under hygienic conditions.
- **Ensure control over quantity intake:** Children of 9–12 years can gauge how hungry they are. We must never force them for more if they do not want to eat. Doing so will override their feeling of fullness. Food should not be used as a way of showing love. Besides, skipping a meal is no problem as long as the child is healthy. But this should not be made a habit.

Health and nutrition issues of school age children

With the concerted efforts of parents in following immunisation schedules and healthy nutrition pattern the child by this time is strong enough to fight occasional colds and cough.

You may know that **obesity** is a growing health risk among children now. This is largely due to a diet rich in fatty foods high in salt, low in fiber and beverages with added sugar. Non-active lifestyle further complements the situation. The problem is more among children from higher socio-economic sections of our society.

Type II diabetes and hypertension, earlier rare among children, are becoming more common among youngsters nowadays. This is attributed to the rise in childhood obesity.

Under nutrition still remains a serious health hazard among lower socio-economic groups. Children from poor families go to school on an empty stomach. The result is that these malnourished children are not likely to perform well in school. Instead they are at a greater risk of morbidity and mortality.

The mid-day meal scheme (MDMS) implemented by our government provides free lunch to school children from Classes I–VIII. The scheme has shown very good results. Teachers report that classroom performance and attention spans of children have improved significantly. Not only has this school enrolment increased but drop-out rate has declined too. MDMS has been shown to reduce the gender gap in education by boosting female attendance.

In our country we face the dual problem of undernutrition as well as over-nutrition. So if we continue to spread the benefits of healthy nutrition it will have an impact in the long run. Besides “School Health” programmes providing free health checks and treatment will increase overall well-being of children.

The overall development of children requires concerned care and quality education. This is what will be discussed in the next chapter.

Key terms and their meaning

Complementary feeding: Inclusion of other foods to the infant’s diet in addition to breast milk

Malnutrition: Refers to both undernutrition and overnutrition. In undernutrition the body suffers due to lack of nutrients and in overnutrition the body suffers due to excess of nutrients.

Obesity: Deposit of excess fat in the body leading to body weight rising above normal levels. This is caused by intake of more calories than can be spent on body metabolism and physical activity.

Hypertension: High blood pressure

Diabetes: Deficiency of insulin in the body leading to rise in blood glucose and presence of glucose in the urine.

■ REVIEW QUESTIONS

1. Why should we limit the intake of saturated fats, excess sugars and salt in a school child's diet?
2. How does involving children in meal planning help in healthy eating?
3. "Childhood obesity is on the increase." Give reasons.
4. How has the Mid-day Meal Scheme" boosted children's health as well as school performance?

■ SUGGESTED ACTIVITIES

- (a) You are visiting your native village or any other village where you find that children are malnourished and victims of many resulting diseases. If you were asked to talk to the parents what would you say about—
 - (i) role of adequate nutrition in protecting children from diseases?
 - (ii) planning balanced meals for young children?
 - (iii) communicable diseases and importance of immunisation?
 - (iv) immunisation schedule during preschool years?
- (b) Your neighbour's two-month-old child suffers from diarrhoea repeatedly. Explain about—
 - Nutritional needs of infants
 - Importance of exclusive breast feeding for the baby's health and development
 - Low cost complementary foods and their preparation from locally available food stuffs
- (c) Enlist and explain briefly the steps involved in developing healthy food habits in school going children.
- (d) Explain the aspects you will take into account in helping children with special needs with nutritional issues—
 - (i) Observation
 - (ii) Physical activity
 - (iii) Developing eating skills
 - (iv) Variety
 - (v) Special diets
- (e) How do family, media and peers influence the food intake of children?



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13

CARE AND EDUCATION

LEARNING OBJECTIVES

After completing this chapter the learner is able to–

- state the significance of the periods of infancy and early childhood from the perspective of development.
- explain the need for providing ‘care’ and ‘education’ and the meaning of these terms with reference to early childhood and middle childhood years.
- discuss the nature of education in the early childhood and middle childhood years.
- analyse the factors that interfere in universalising elementary education.

13.1 INTRODUCTION

All living species take care of their young ones. But did you know that the human infant has the longest period of dependency on adults? There is a correlation between the period of dependency on adult care and the size and complexity of the brain. The human brain is the most complex and represents the highest end of the spectrum of biological evolution.

In this section we will study why care and education are important during childhood years. We will also reflect upon what is meant by ‘care’ and ‘education.’ You know that the period of childhood is divided into infancy (birth–2 years), ‘early childhood years’ (2–6) years and ‘middle childhood years’ (7–11) years. For the purpose of discussion in this section, we shall consider the period of infancy and early childhood together. The discussion on care and education in middle childhood years is given separately.

13.2 INFANCY AND EARLY CHILDHOOD YEARS

The significance of the first six years

On the basis of research evidence from across the world, we now know that the periods of infancy and early childhood are in many ways the most significant and critical in the life of an individual. Would you like to reflect why this is so, before you read further? Note your comments in the box and compare them with the discussion which follows.

Box for your comments

Firstly, the rate of development in all areas is the most rapid during these years.

List the various areas of development which you have read about earlier.

You know that the brain controls development in all areas and the rate of brain growth is the fastest in the first two years of life. Research on brain development has shown that while we have all the cells that our brain will ever have at the time of birth, the synaptic connections between these brain cells form rapidly during the first two years. It has been found in research, that the more the synaptic connections, the better the functioning of the individual. Because of the rapid rate of brain development the first six years of life are critical for various areas of development. By 'critical' period we mean a time period during which development in a specific area is particularly sensitive to favourable and unfavourable experiences. Unfavourable experiences such as lack of adequate food, unhealthy living conditions, lack of proper health care, illness, lack of love and nurturance, lack of interaction with adults and stimulating experiences can hinder development to a considerable extent.

On the other hand, favourable experiences can foster and enhance development. Can you state what we mean by favourable experiences? An environment where the child gets favourable experiences is also

called a stimulating, optimal or an enriching environment, while an environment where the child has unfavourable experiences would be called a deprived environment or one that creates difficult circumstances. The impact of unfavourable experiences during the critical period can be irreversible at times. In other words, the damage to the child's development cannot be undone even if positive experiences occur at a later period. Because of this vulnerability to deprivation, it is important that the child has a minimum of harmful experiences. The early childhood years have, therefore, been called critical periods in development. Figure 1 shows the development of synaptic connections between brain cells when the environment is enriching and when there is deprivation. Figure 2 shows critical periods for some aspects of brain development and function. For example, from the figure it is clear that while the development of binocular vision, emotional control and language continue till five years of age, the critical period lies between birth and two years of age.

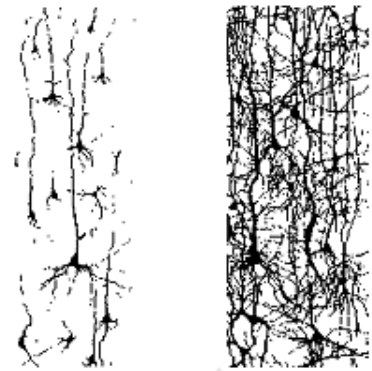
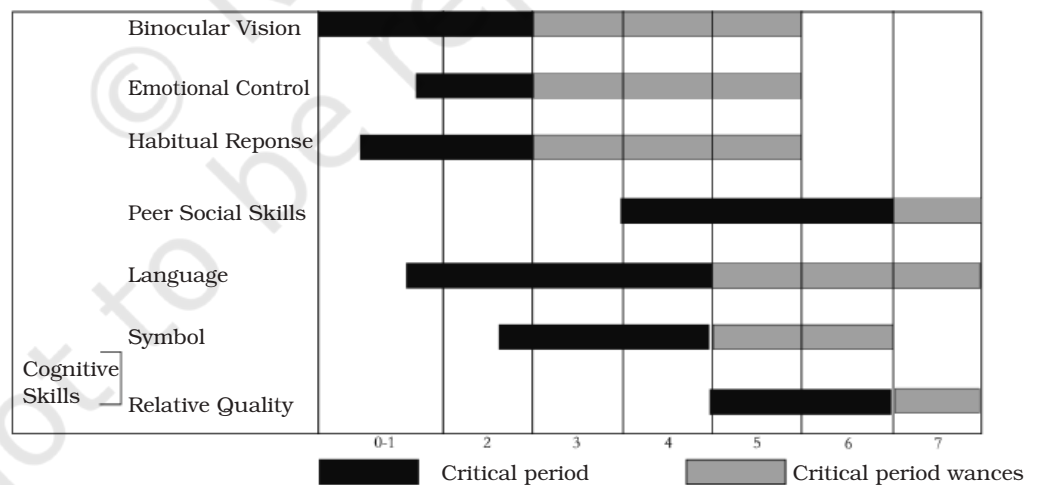


FIGURE 1: DEVELOPMENT OF SYNAPTIC CONNECTIONS BETWEEN BRAIN CELLS

(Source: <http://www.brainwave.org.nz/stages-of-brain-development-from-before-birth-to-18/>)



(Source: *Reaching Out to the Child*, HDS, World Bank, 2004).

While development and learning continue throughout life, never again does a person acquire such a diverse range of abilities, skills and competencies in such a short period as one does during the first six years of life. You have to only think of a newborn, who is dependent on adults for survival, grow into an active and curious six-year-old capable of looking

after many of her/his needs herself/himself, communicating with others and developing relationships, to realise how true this is. Also, during this period the child acquires many competencies which, if missed, may not be acquired later, or if at all, with difficulty.

Secondly, while the early childhood years are sensitive periods in development wherein harmful experiences can have a lasting impact, these years are also a period of tremendous resilience. Thus, if the child has had unfavourable experiences in the early years and subsequently has favourable experiences, she can recover from the effects of negative experiences to a lesser or greater degree, though with some difficulty. Let us take the example of learning to speak, to understand this. The child utters the first word around the first birthday but does that mean language development starts from one year of age? No, development of language starts from the day the child is born as the child hears others speak and tries to make sense of all the sounds she hears. Around nine months of age, the child makes repetitive sounds called babbling. You may have heard infants make sounds like *bababa*, *mamama*. This is called babbling and this is followed by the utterance of the first word. It has been seen that children who cannot hear begin to babble at the same time as the children who can hear, but then the amount of babbling decreases and there is a delay in speaking. This is because they cannot hear language being spoken – neither their own babbling nor the speech of others. If the lack of hearing is not detected and the child is not provided with hearing aids then the child will not learn to speak. If hearing aids are provided later, then much more effort is needed to help the child to speak than if the hearing aids had been provided earlier. Thus the absence of feedback of language sounds demonstrates how critical this experience is to the development of speech in children.

Thirdly, the experiences of the few years of life influence and shape later behaviour to a large extent. Many of our attitudes, ways of thinking and behaviour can be related to experiences during the earliest years of life.

Meaning of care and education

What activities come to your mind when you think of care and education for a child below 6 years of age? Note your comments in the box below before you read further.

Box for your comments

What do we mean by education? Typically, we think of education as studying in school. But then does that mean that when we stop going to school or college, we stop getting educated or that before the child joins school there is no education? This is not so. Education is not merely formal learning in institutions but begins from the earliest years of the child at home and continues throughout life. It is just that the nature of education, and where we acquire it, changes from one stage of our development to the next.

We have explained the meaning of care and education in terms of three basic needs of the child which must be met for optimal development, as discussed in the following section.

(i) **Need for physical care:** The need for physical care is apparent and obvious to most of us. The infant and the preschooler needs protection, food and health care in order to survive, grow and develop – this is an essential pre-requisite for development. It is equally important to meet the child's needs for stimulation and nurturance. When the child has a disability, such as when the child is unable to see or hear or walk or when her/his cognitive functioning is lower compared to other children of her/his age, then the child's needs for care and stimulation have to be met in context of the disability. Thus, over and above the physical care that needs to be provided to any child, the family will have to provide for needs that emerge from the specific conditions created by the disability. To give an example, most sighted persons learn about objects and people by seeing them – and this happens so spontaneously that we are not even aware of it. But when the child has difficulty in seeing, then the family members will need to make deliberate efforts to help the child learn by using her/his sense of touch, hearing, smell and taste. Thus how the child's need for stimulation gets fulfilled is influenced by her/his inability to see. Let us understand these needs in detail.

(ii) **Need for stimulation:** Children are curious from the earliest days of their life and are eager to interact with and make meaning of the events that are happening around them. They enjoy exploring and finding out things. This is the way they learn and at no other stage in life is the urge for exploration so strong as it is in the early years. When we play, sing and talk to the infant, we stimulate her to think, reason and understand the world around her.

Stimulation thus means providing the child with a variety of experiences that are meaningful for her and are in accordance with her maturational status. Through such experiences the child learns about the things and people around and makes meaning of experiences. In this way by active exploration of objects and active participation in events around the child makes sense of the world and constructs her/his understanding. Exploration and discovering things for oneself is a

pre-requisite for optimal cognitive development. The word 'constructs' means that the child creates her/his own understanding by active participation; it is not something that can be 'taught' to them by someone else while the child is passive. Of course, what the child finds meaningful will change as she/he grows from one stage to the next. Also, the child needs the adults for helping in understanding experiences and to introduce her/him to new and challenging experiences according to the current level of development.

ACTIVITY 1

In the above passage we have introduced certain concepts and used certain terms which you will understand fully only when you observe children for yourself. Therefore as part of Activity 1 carry out three such tasks that help you understand the concepts you are reading about.

- (a) As said earlier children enjoy exploring and discovering, and in this way they learn about things. Observe a child between one and six years of age involved in any activity of her/his choice. What do you think the child is learning from this activity? In which area is development being fostered through this activity? Discuss your observations and findings with the teacher and other students in the class.
 - (b) Observe two children – one aged 2 years and the other aged 5 years, engaged in doing something. Do you think that they found the activity meaningful? Was there any difference in the two activities in terms of their difficulty level or complexity? Do you think the 2-year-old child would have enjoyed the activity being done by the 5-year-old and vice versa? Would she/he have found the activity meaningful? Why do you think so?
 - (c) Observe a 6-year-old child involved in an activity with an adult – father, mother or any other adult. Describe the activity that the child was involved in and explain in what way did the adult help the child to understand her/his experiences and introduce her/him to new experiences
- (iii) **Need for nurturance:** Love and nurturance are the foundation of all development. Development is not a result of the mechanical act of feeding the child, taking care of health needs and providing stimulation and learning experiences. If the child's needs for affection and love are not met, if the child does not develop warm, trusting and loving relationships with the adults around she/he will not feel emotionally secure, may have low confidence and self-esteem, and this can hinder development in all areas. You have read in the chapter on self that when the infant finds consistency in care and affection in the first year

of life, she/he develops a feeling of trust. It has been seen that when the child feels secure and has a trusting relationship with caregivers, she/he explores more and, therefore, learns more. When the child does not have a feeling of trust she/he is apprehensive of new situations and is unwilling to explore and clings excessively to the caregivers. This comes in the way of the child's learning. Similarly, the child needs to develop feelings of autonomy, initiative and industriousness. During the early and middle childhood years, as has been explained in the chapter on self, these are necessary for the development of a positive self-concept.

ACTIVITY 2

We often underestimate the role of emotions in learning. Reflect on your experiences and think of a situation where your learning was influenced by your emotional state, like fear or embarrassment, rather than the complexity of the task as such. This will help you to understand the importance of love and nurturance in learning of the child.

- (iv) **Meeting the needs through early childhood care and education:** We have spoken of these needs separately for the purpose of discussion. But it is important to understand that all these needs of the child have to be met simultaneously for optimal development. Can you say why this should be so? This is because development across areas is highly inter-related, particularly in the early childhood years. In other words, development in one area influences and is influenced by developments in all other areas. The child grows as a whole person — deprivation with respect to any one aspect of development influences others. The formation of synaptic connections, which were described earlier in the chapter, is dependent on receiving adequate nutrition, being free from serious and chronic illness, and engaging in stimulating learning experiences in an emotionally secure environment.

Because of the highly inter-connected nature of physical, cognitive, language and socio-emotional development in the early years, we speak of care and education together as 'early childhood care and education' (ECCE). ECCE refers to the totality of the inputs with respect to physical care, stimulation and nurturance that must be provided to the child. Education in the first 6 years of life is not conceived of in terms of subject areas that we are so familiar within our school life. Rather, it means experiences that help the child develop in physical-motor, socio-emotional, cognitive and language domains. We will discuss the nature of ECCE experiences a little later in the chapter. Let us first reflect upon who provides ECCE to the child.

Who provides ECCE?

ECCE is provided in the country by the government, private institutions and the voluntary sector (NGOs). The services are provided through crèches and preschool centres which are known by various names such as nursery schools, kindergartens, play schools anganwadis and balwadis. The distinction is that crèches provide ECCE to children from birth to 3 years while preschool centres cater to children in the age group 3–5+ years.

Why provide ECCE services?

There are many reasons why we need services to take care of children's growth and development.

Firstly, in our country all children do not grow up in an optimal environment. Many children live in conditions of poverty where their basic needs of food, health and hygiene are not met. In such a situation, ECCE services can help to meet the basic health and nutrition needs of children, provide early stimulation to the children in the age group 0–3 years, and additionally, impart preschool education to children in the age group 3–6 years.

A **second** reason for providing ECCE services is that a large number of women across all socio-economic strata work outside the home to earn a livelihood. So the family is not physically available in many homes to take care of the child. Of course, you may say that other options are available to the family such as

- leaving the child with a family member or friend during the day
- the mother taking the child to her workplace
- leaving the child with hired help in the house
- leaving the child with older child at home.

However, each of these options has its limitations. Hired help is expensive and families from lower and middle socio-economic strata may not be able to afford their services. The mother taking the child to the workplace is appropriate if there are crèche facilities available for the child. If not, the environment at the workplace can be inappropriate or hazardous for the child. You may have seen many young children playing at construction sites while their parents work as labourers. Do you think the environment is safe for the child, let alone stimulating and caring? Even if the child gets the company of other children it is at the cost of the child's safety. In our country many women have no choice but to take the child with them as there are not enough crèches for children's care. The first alternative stated above is possible only when there are adults at home. In the cities many families are nuclear – when both the parents are out earning a living, there is no one to look after the child at home; in families from lower socio-

economic strata often all the adults have to go out of the house to earn a living. The fourth option – that of leaving the young children with an older sibling, usually a girl, is what most families from lower socio-economic strata depend on, but this deprives the older child of schooling. The only option that is in the best interest of all is to provide child care services in the form of crèches.

The **third** reason for providing ECCE services is that even the best of family environments cannot provide the child with adequate play activities and the company of children which a preschool is able to provide. In a preschool centre, children get opportunities to interact with each other and engage in collective activity. This provides a context for learning to share, understand each other's point of view and develop universal values of harmony and compassion for all.

The **fourth** reason for providing ECCE services comes from the benefits that the ECCE programme brings to children both in the short run and in the long term. In the short term perspective, a good ECCE programme helps the child to be prepared for primary school both in terms of academic preparedness and social preparedness. Can you say what these terms mean? Academic preparedness does not mean that we teach the child to read and write in the ECCE centre – it means that we prepare the child for formal schooling by developing in the child the skills needed in school. Some examples are sharing, following a schedule and adaptation to a new environment. Social preparedness means that the experiences of the preschool help the child to learn to relate with other children and adults which will help in the adjustment in the primary school. It has been found that children who have attended an ECCE programme are less likely to drop out of primary schools, they show fewer instances of delinquency and drug addiction and become productive as adults, contributing to the family income as well as to the nation's economic capital. Thus, this fourth reason for providing ECCE services can be called the economic argument for investing in children.

The **fifth** and perhaps the most important reason for investing in early childhood programmes is that every human being has the right to grow and live in a healthy and enriching environment so that she/he attains her full potential. This is called the rights perspective to human development.

ACTIVITY 3

Carry out a survey of five families in your neighbourhood (or in your family) where both the parents are working and they have at least one child under the age of 6 years. Find out what arrangements for child care are made by the family?

The nature of ECCE

As discussed above, ECCE comprises health, nutrition, stimulation, and preschool education inputs so that there is sound and holistic growth and development of the child. Health inputs include health check-ups, immunisation, referral services, and treatment of illnesses. Nutrition inputs include providing supplementary nutrition in the form of mid-day meal and vitamin supplements. Stimulation and preschool education inputs means providing developmentally appropriate meaningful experiences that foster development in various areas. These experiences must be provided to the child through the child's activities and play, and not through formal education. Children learn as they play and are involved in activities that are appropriate to their age and developmental level.

Children's learning does not occur in narrowly defined subject areas – rather learning and development are interrelated and most activities that stimulate one aspect of development also affect other dimensions. Let us understand this with an example. Singing rhymes is a common activity that most parents carry out with the child from the time the child is a few months old. Rhymes are an integral part of the curriculum as well in preschool centres. This activity helps in the child's language development as she/he sings the rhymes and hears others speak; it helps in the child's cognitive development as the child's parents or teachers in the preschool talk about the objects, events or concepts being described in the rhyme; it helps in social and emotional development as the adult is interacting closely with the child in a pleasurable manner during the singing of the rhyme and both the child and the adult are deriving satisfaction and pleasure from doing an activity together; if the rhyme is sung with actions, it also contributes to the child's physical and motor development. The stimulation activities in the first three years and preschool education in the 3–6 years should be based on play, art, rhythm, rhyme, movement and active participation of the child.

13.3 CARE AND EDUCATION DURING MIDDLE CHILDHOOD YEARS

The middle childhood years are the years when the child receives primary education. The goal of primary education is to develop in the child basic literacy and numeracy skills which serve as the foundation for learning at the secondary stage. Even after seven decades of independence, the nation has not been able to achieve universal enrolment in primary education. The enrolment in Classes I–V is 51.9 per cent for boys and 48.1 per cent for girls, which shows there are more boys than girls in primary classes. The drop out rate of children at the primary stage is 6.35 per cent. (Source: *School Education in India*, U-DISE Flash Statistics, 2016–17, NIEPA). Even after

enrolling in the primary school, many children drop out without completing the five years of primary school. Thus, not all who enroll complete their primary education. The government has now adopted a campaign mode to universalise primary education through which it is making concerted and continuous efforts to enroll and retain the children in the primary school. You must have seen advertisements of this campaign on the television and in newspapers. Can you recall the name of this campaign? Yes, it is *Sarva Shiksha Abhiyaan*. Special incentives and efforts are being made to get the girl children in school since it is they who are often made to stay back at home to do household tasks or look after the younger children.

Can you think of some reasons why we have not been able to universalise primary education? Note your answer in the box and compare with the discussion which follows.

Box for your comments

Difficulties in children's primary education

In India there are wide variations in young children's schooling from the beginning. A large number of them are unable to attend school for the reasons that follow.

Firstly, in many families that belong to the lower socio-economic strata all hands in the family are needed to help in earning a living. So as soon as the children are able to they are involved in the income generating activity of the family or they help in the house.

Secondly, even when the children are enrolled in the school they are withdrawn at harvest time or during the sowing period as their services are needed at home. This is because the school breaks for summer/winter do not coincide with the farming seasons.

Thirdly, the curriculum in the school is far removed from the child's reality and, therefore, the child does not find it meaningful. Sometimes the lessons being taught do not relate to the child's experiences and they may not reflect the issues and concerns of communities living in diverse

geographical and cultural parameters. Not finding the education relevant for their present or future life, the children drop out of school or are pulled out by the family.

Fourthly, poor infrastructure in schools, for example, inadequate toilet facilities and distant locations, hinder attendance.

Fifthly, many children with disability are not able to join school for various reasons. One of the primary ones is that all schools in our country are not equipped to deal the special needs of the children with disability, and therefore are reluctant to enroll them. This prevents the children with disability from receiving education along with other children of their age. There are special schools for children with disability but these are very few compared to the need and are mostly located in urban and semi-urban areas. Besides, it is being increasingly felt that the children with disability should not receive education in separate schools; instead all schools should enroll all children, with or without disability – in other words, **the education system should be inclusive** in nature. But to make this vision a reality, we need to train the teachers and equip the system at various levels so that the needs of all children can be met. This is happening at a slow pace and will take time.

The nature of primary education

As was said when we were discussing ECCE, children are not passive beings who absorb information given to them, but they actually construct knowledge for themselves as they encounter various people and events. Therefore, education during primary years should be such that it engages children in activities through which they can construct their own understanding. It needs to be flexible enough to suit the diverse social, cultural, economic and linguistic contexts of our country. The pedagogy and curriculum transaction in early primary grades – Classes I and II – should be activity-based and experiential to retain continuity with approach and methodology of teaching in the preschool years. This will help the child to adjust in the new and unfamiliar environment of the primary school.

However, as in the case of ECCE, there is a large gap between what ought to be and what is.

In the past few decades, there have been several attempts by government and non-government organisations to address these gaps in education. Many innovative and path breaking initiatives have been taken by educationists. One of the latest initiatives with far reaching impact is the National Curriculum Framework developed by the National Council of Educational Research and Training (NCERT) in 2005. While the NCERT does this exercise every five years, the innovation in this particular exercise is that it has explicitly laid down the theoretical foundations on which education should ideally be based. It provides guidelines for textbook

writers to present the material in a way that would encourage the learners to be active creators of knowledge instead of being passive recipients of information contained in the books.

In the next chapter, we move from education to the fascinating areas of clothes for children. You will be surprised to know how many functions are served by what we wear. Do read about this in “Our Apparel”.

Key terms and their meaning

Critical/sensitive periods: a time period during which development in a specific area is particularly sensitive to favourable and unfavourable experiences.

Trust: the feeling that the environment is a safe and secure place where one's needs will be met. This feeling develops when the infant receives consistent care and affection in the first year of life. Active exploration of objects and active participation in events around the child makes sense of the world and constructs her/his understanding.

Stimulation: providing the child with a variety of experiences that are meaningful for her and are in accordance with her maturational status. These experiences involve active exploration of objects by the child and active participation in events around the child. This enables the child to make sense of the world, learn about the things and people around and construct her/his understanding.

ECCE: the totality of the inputs with respect to physical care, stimulation and nurturance that must be provided to the child in order to ensure all round development.

Children with disability: children who have characteristics such as intellectual impairment, visual or hearing impairments, or difficulty in using their limbs, etc. In many ways they are like all other children.

Activity based and experiential curriculum: curriculum where the child is involved in activities which stimulate the child to explore, find out and think for herself/himself.

■ REVIEW QUESTIONS

1. Why are the periods of infancy and early childhood considered to be the most significant and critical in the life of an individual?
2. What is meant by 'critical' / 'sensitive' periods in development?
3. Why do we need to provide ECCE services in our country?
4. Describe the basic needs of the child, giving examples. Why is it important to fulfil these basic needs?
5. Explain the meaning of the term 'Early Childhood Care and Education'? How are the basic needs of the child met through ECCE services?
6. What are the reasons for our country not having been able to universalise elementary education?
7. What is *Sarva Shiksha Abhiyaan*?

■ PRACTICAL 13

Care and Education - A

Theme: Observation of two children in the neighbourhood and reporting on their activities and behaviour

Tasks:

1. Observing two children in the age group birth to 10 years, for one hour each
2. Noting their activities and behaviours
3. Writing the report

Purpose of practical: We see children around us but we rarely stop to think how children in different age groups are different from each other and what do they have in common. We rarely stop to view events and situations from their perspective. This practical will help you to enter briefly into the world of children and enable you to become aware of their interests, their ways of thinking and responding to situations.

Conduct of practical

1. Identify two children in your neighbourhood whom you can observe easily and who would not feel hesitant or shy in your presence.
2. Identify a time during the day when it is convenient for you to observe them in their home or outside when they are engaged in some activities.
3. Keep a note pad with you and observe the activities of each child separately for an hour. Take brief notes in the note pad which you will expand later.
4. Use the following format for recording the activities of each child

Name of the child _____

Age _____

Sex _____

Activity

Theme of the activity: e.g., eating/playing

Time period of the activity – in minutes

People involved in the activity – who all were part of the activity

Description of the activity – what the child and the others with her/him did during the activity

Child's behaviour during the activity –

For each activity that each child does during the one hour period, make a record using the above format.

5. Compare the nature of the activities of the two children and their behaviours. Analyse on the basis of the following points–
 - were there differences in the duration of involvement in an activity?
 - were the nature of activities of the two children different?

- did they show different behaviours in response to the same activity?
- were these differences and similarities due to the age and the sex of the children?

■ PRACTICAL 14

Care and Education - B

Theme: Collecting information from different regions of India about child care practices in early years and gender similarities and differences therein

- Tasks:**
1. Collecting information about child care practices from three regions of India
 2. Analysing whether there are differences in child care practices from different regions.
 3. Analysing whether there are differences in child care practices on the basis of the child's gender.

Purpose of practical: While all families want to have children, it has been seen that unfortunately in many parts of our country the boy child is preferred over the girl child. This may lead to discrimination in child care practices such that the health, nutrition and education of the girl child suffers. Being aware of the child care practices will help you to be aware of discriminatory practices and to prevent the same to the extent possible.

Conduct of practical

1. Identify three families from different regions of the country such that you get at least one family with a girl and one family with a boy. The families should be willing to spend time with you to give you information about the child care practices in their community and the practices followed by them in bringing up their children.
2. Spend two-three hours with each family asking them about specific health nutrition and education practices they have followed with their children. You will most likely be able to meet the mother or the grandmother. Following are some of the questions you can ask–
 - How is the birth of a child celebrated in your community? Are there different celebrations for boys and girls?
 - What are the practices with regard to feeding of the newborn child?
 - What ceremonies are performed in the different months during the first year of the child's birth? Are their different ceremonies for boys and girls?
 - How does the food and feeding pattern change as the newborn grows in the first year? Are girls and boys given different types of food?

CARE AND EDUCATION

- What do you do when the child falls ill – try a home remedy, go to the doctor, go to a local healer?
- What type of toys are bought for the child?
- When is the child sent to school?

These are some examples. You can ask more questions.

3. Record your findings using the following format.

Child Care Practices	Girl	Boy
Health		
Nutrition		
Education		

Analysis – This should indicate what similarities and differences you found in child care practices with respect to the girl child and the boy child.



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14

OUR APPAREL

LEARNING OBJECTIVES

After completing this chapter the learner is able to —

- discuss the clothing functions and the factors influencing selection of clothes.
- identify general clothing needs of the children.
- recognise the characteristic features and clothing requirements of children from different age groups.
- discuss the clothing needs of children with special needs.

When you meet people for the first time what impacts you the most? Their clothing, or face or their personality or all of these? Our posture, walk, smile or frown and other forms of body language contribute to the impression we create. Actually of all these aspects clothing creates the first impression. We recognise that good appearance is important. In order to appreciate the true importance of dress or clothing we need to discover how we feel about the clothes we wear.

14.1 CLOTHING FUNCTIONS AND THE SELECTION OF CLOTHES

Look at the clothes you are wearing today and think about why you are wearing them. May be it was the weather that determined what you chose or the kind of activity in the school that you were to perform or may be the function you were to attend with your family or friends, or for no particular reason.

We all wear clothing and we wear different types of clothing. Let us begin to understand why we select the clothing we wear. At the same

time let us gain some insight into other people's reasons for their clothing choices.

Modesty

Probably the most obvious reason for wearing clothes is simply that in our society, people do not go around without them; we wear clothing for modesty. You probably know that young children do not feel embarrassed going about without any clothing. The need to have their bodies covered is something that they are taught.

Ideas about modesty are shaped by the society in which we live. What is considered modest in one society might not be considered as modest in another. For example in some communities women not covering heads may be considered as a sign of immodesty, whereas, in other communities women not covering their legs is thought to be immodest.

Protection

We wear clothing to protect ourselves from the environment – from harsh weather conditions, dirt and pollution. We change our clothing according to the different seasons. In hot summer months we wear light weight cotton clothes and may even cover our heads to protect ourselves from the scorching sun, whereas in winter months we cover ourselves in layers of woollen clothing for protection.

Clothing can also protect us from physical harm. Fire fighters wear special clothing for protection from fire, smoke and water. Many sports activities such as football, hockey and cricket require clothing that is specially designed to protect the players from injury. You must have noticed the arm guards, leg guards, wrist bands that these players wear along with their normal dress for special protection.

ACTIVITY 1

Can you identify the clothing that is needed in the rainy season? What type of fabrics, garments and accessories are needed in that weather? Make a list and discuss with your friends.

Status and prestige

Clothes can also be a sign of status. It used to be true that you could identify people's social and economic status by their clothing. You may have seen in certain historical films that the king's and courtesan's clothing are quite different from the common people's clothing. Everybody's sense

of identity includes a feeling of social status or prestige, and the manner of dress is one way by which this can be accomplished. In India on festivals and important family events people wear clothes that may reflect their social status.

However, as more and more stylish clothing become available at reasonable prices, today many more young people can afford to buy them. Thus, as similar kinds of clothing (T-shirt, jeans, salwar-kurta) become available for all ages and economic levels, these also serve as social class levellers, a step towards social equity in a democratic society.

Adornment

What about wearing clothes just because you want to look attractive? Yes, we wear good clothes to enhance our appearance. The need to decorate and adorn the body seems to be one of the more universal drives of men and women and can be found to some degree in all societies. Ear piercing, nail polishing, tattooing, hair braiding and knotting are forms of body decoration still used. The desirability of each type of adornment is determined by the society.

There is a vast range of fabrics available in the market, a large number of which are used for clothing and apparel. In an earlier chapter (Chapter 7) you learnt about these fabrics in terms of their fibre content, yarn and fabric types and the finishes applied during production. Thus, you can relate the fabric characteristics with their suitability for diverse usages and care requirements. Selection of the type of clothing and apparel not only takes into consideration the fabric characteristics but also the right style of garment and its accessory details. Having earlier discussed the reasons for wearing clothes, let us look at the clothing needs and selection of clothing for different age groups.

14.2 FACTORS AFFECTING SELECTION OF CLOTHING IN INDIA

Assessment of clothing needs and the final decision in the selection is dependent on the geographical features, climate and seasonal features of the area where they have to be used. It is also affected by easy availability, cultural influences and even more strongly the family traditions. In general, the factors that affect selection of clothing can be summarised as follows–

Age

Age is an important factor to be considered at all stages of life. It becomes more important while selecting clothes and apparel for children, since it is

parents or elders of the family who are taking the decision regarding their clothes. It is important to remember that children, specially infants and toddlers, are not dolls to be dressed up and decorated for the satisfaction of adults. Their physical growth, motor development, association with people and things around them and activities they indulge in, all have to be taken into consideration from the point of view of comfort and safety.

As children grow, their association and interaction with people outside their immediate family increases. They become aware of clothes that other people wear and how others view their clothes. Conformity to peers begins to become important in middle childhood and increases in importance with age. Clothes and apparel play an important role in helping the growing child feel a sense of belonging and acceptance. As children grow, their clothing changes and clothing for girls and boys becomes different. Approaching adolescence, the rapid physical growth brings about even further gender differentiation in clothing. The adolescents also start recognising cultural and societal norms as well as contemporary trends which influence their selection of clothes. They are often convinced that their popularity and relationships in a group are dependent on appearance, which in turn is due to the “right clothes.”

Climate and season

In the previous section you read that protection from environment and weather is one of the main reasons for wearing clothes. Hence the selection of clothing for children has to be suited to the climate. Clothing requirements for cold climate or season would be very different from warm or temperate climate and even for areas with heavy rains or high humidity. When some types of clothes and fabrics are suitable only for 3–4 months in a year, their cost and quantity has to be considered carefully. This is more important for growing children because they would have outgrown them by the next season.

Occasion

Selection of clothes also depends a lot on the occasion and time of the day. There are also unwritten rules and traditions for clothing for each occasion. Most schools have dress uniforms and rules regarding not wearing accessories and ornaments. In schools, where it is not compulsory to wear a uniform, very formal, very dressy or very sporty clothes can cause disciplinary problems for children. They may become objects of ridicule by their peers or may be deterred from joining group activities whole heartedly.

Social get-togethers and parties are the occasions when children like to use ‘nice’ apparel to highlight their individuality. At family functions

such as a wedding even children may have to follow the traditional norms and wear something suitable. In most communities, rites and ceremonies associated with the passage of life continue to follow traditional, some time modified, norms. The clothing selection is reflected not only in the style of dress, but also in the choice of fabric type and texture, colour and accessories. Concepts of clothing in terms of modesty and protection vary with occasion, activity and time of the day. Wearing the right thing at the right time is most important.

Fashion

The term 'fashion' is identified with a style which has contemporary appeal for the masses. With children's constant exposure to TV, even they become quite fashion conscious. Fashion may be inspired by important personalities, social or political leaders, film stars or even important national events. These can be reflected in apparel in terms of fabric types, colour and design of the material, shape or cut of the garment or simply the accessories (like scarves, bags, badges, belts, etc.) that go with it. Certain fashions that highly exaggerate some features of dress or may affect only part of the society, or a specific area are very short lived. These are known as 'fads'. Children and adolescents are quite likely to be taken up by fads.

Income

The amount of money available also affects the selection of clothing. This is reflected not only in the initial cost while purchasing it, but also in its use for varied purposes, durability, and care and maintenance requirements. The number of children in a family, their age gaps and gender may also affect the final choice. Families of high-income group often have greater variety in clothing, specially with reference to special occasions. In families with modest or low income, the clothes of older siblings are recycled and worn by younger ones to economise on the expenditure on clothes.

One reason why schools prescribe a uniform dress for children is to de-emphasise the socio-economic differences among students.

14.3 UNDERSTANDING CHILDREN'S BASIC CLOTHING NEEDS

As children grow, they like to identify with their peers and or adults whom they admire. One way of doing that is to dress like them. This is an emotional experience for them. Children's clothes must be suitable for their different activities, and must give them freedom to play, something

that is so essential for their physical growth. The clothing needs of children, from infancy to adolescence, are discussed below in detail.

Comfort

The most important requirement for children is comfort. They need to roll, crawl, squat, climb, run and jump without being hindered by clothes. They need to play without fear of getting their clothes dirty. Tight clothes are avoided as they restrict activity and even interfere with natural blood circulation. Similarly elastic bindings should not be so tight as to cause pain.

Heavy and bulky clothes are difficult to handle and tiring for children. Select lightweight clothes that are made of acrylic and nylon fibres, especially for winter apparel, to keep warm. Children need to bend and stoop often, so sufficient ease is essential in the crotch to allow for comfortable movement. Clothes that hang from shoulders are generally more comfortable than those hanging from waistline. Necklines have to be wide enough so that there is no strain across the throat. Similarly sleeves with bands at the end are irritable as it restricts free movement.

Essentially, be sure that fabrics are soft and absorbent, suitable for the child's sensitive skin. Organdy collars for girls' frocks and heavily starched shirts for little boys are uncomfortable to wear. Clothes that are too large can be as uncomfortable as those that are too small. To avoid this, select garments that fit but have enough allowance for child's growth. Regarding sleeves, raglan sleeves provide for more freedom as well as growth than set-in fitted sleeves.

Safety

Comfort and safety go hand-in-hand for children's clothing. Clothes which are too large may be uncomfortable and may also be unsafe. Loose garments can catch on fire more easily (than fitting clothes) around the cooking area. Hanging sashes and trims can get caught in the moving parts of the tricycle or objects. As bright colours can be more easily seen by motorists than dark and gray colours, it is advisable to use such colours for children's clothing. Loose buttons and trims are unsafe for infants and toddlers who put every thing into their mouth.

Self-help

Dressing and undressing themselves give children a feeling of confidence and self-reliance. Many of children's clothes are too difficult to put on or take off by the children themselves. Remember, it becomes frustrating for a child who wants to dress on her/his own.

The most essential self-help feature is the opening in a dress. This must be large enough so that the child can get in and out of the garment easily. Front openings are easier to handle. Buttons should be large enough to be grasped by a child's hand. Front and back side of the dress should look different so that the child can learn to identify it easily. Small snaps, hooks and eyes, and bows tied at the waist or the neck and small buttons with thread loops retard the self-help features in a dress.

Appearance

Children have their own ideas about their clothing and they should be allowed to express their preferences. Exercising some choice at the younger ages will help them develop their ability to select appropriate clothes. Bright colours for outer wear make it easier to spot a child on the play ground or street. Lines should highlight desirable features and camouflage undesirable ones. Fabric designs should be in scale with smaller figures. Usually small checks, strips, plaids and dainty prints are best. Although large designs may be interesting, often they overpower the small child wearing it.

Allowance for growth

Children's clothing should have allowance for growth, especially in length. It is not advisable to buy a much larger size as they are neither comfortable nor safe. It is better to choose clothes to fit with the provision to increase length. Select fabrics which do not shrink. Trousers can have cuffs at the hemline which can be later let down to increase the leg length. Adjustable straps on skirts are a must. Raglan sleeves allow for growth better than set-in sleeves. Tucks and pleats at the shoulder line can allow for increasing width.

Easy care

Children are happier if they do not have to be worried about getting their clothes dirty. Even mothers appreciate easy care clothes, ones which can be easily washed and need little or no ironing. Flat seams are essential as they wear longer than plain seams. Areas of strains as knees, pocket corners and elbows can be reinforced.

Fabrics

Soft, firmly woven or knitted fabrics that are easy to care for, comfortable to skin, that do not wrinkle or soil readily, are the desirable fabrics for children's clothing. Avoid clothing which must be drycleaned. Printed

fabrics, corduroy and textured fabrics show less wrinkles and soil. Cotton is the most widely used fabric as it is easily washable and comfortable to wear. Wool is warm but requires special care; it may irritate children's delicate skin, and hence must not be worn next to skin. Polyester, nylon and acrylic clothes wear well and are cared for easily. A blend of cotton and polyester is often more comfortable for a child than pure polyester, as it is more absorbent.

ACTIVITY 2

Observe children of various age groups and note what clothing they wear at ages 2 years, 5 years, 8 years, 11 years and 16 years.

14.4 CLOTHING REQUIREMENTS AT DIFFERENT CHILDHOOD STAGES

We have seen the general clothing needs of the children in the last section. Each stage of childhood has specific characteristics that need to be kept in mind while selecting their clothes.

Infancy (birth to six months)

During the early months the most important factors are warmth, comfort and hygiene. At this age, infants are basically feeding, sleeping and eliminating. Hence the clothes must be comfortable. One can stitch or select clothes which open down the front or have large openings to avoid slipping the dress over their heads. Also, draw strings, especially around the neck, should be avoided as these can get entangled. The fasteners used can be placed so that they can be reached easily and they can be of a kind that will not injure the baby in any way. It is advisable to have plenty of garments that need to be changed often like shirts and diapers.

Physically at this stage, the baby's skin is very delicate and sensitive and thus would demand very soft, light-in-weight and simple-to-put-on



FIGURE 1: CLOTHES FOR INFANTS

and take-off clothes. The fabrics with sizing are not suitable for the babies as it might scratch the skin. Even all wool flannel fabrics for winters would be irritating to the skin, thus a baby flannel, a mix of wool and cotton or silk is preferred. Infants grow very fast at this stage so it is advisable not to buy too many clothes in smaller sizes.

Diapers are the first and most essential requirement for infants. These have to be soft, absorbent, easily washed and quick drying. It is quite common for families to make cotton diapers at home. If old cotton sheets are used for the purpose, they need to be well sterilised and disinfected. Many families have replaced home made diapers with 'gauze' and bird's eye diapers that are available in the market. Pre-shaped diapers are also available but one should be certain about the fit for the baby.



FIGURE 2: PRE-SHAPED DIAPERS

Undershirts are worn in most climates; depending on the weather and geographical location, the material for the undershirt should be selected suitably. Cotton undershirt is suitable for warm climate and soft wool-cotton blend shirts are suitable in cold climate. Usually, shirts and diapers form the basic garments for the infant. Cotton shirts in various styles that slip on easily are preferred.

In rural areas, it has been observed that infants wear clothes which are simple and homemade from used materials.

Creeping age (6 months to one year)

This is the stage when the child begins to show signs of independence. It is very interesting to see babies pull themselves up to the furniture to stand, trying to reach out to objects, to sit or stand on their own. You will notice that all these activities would need clothes for protection and comfort.

Apparel for children in this age group has to be such that it allows for free movement. Thus, the basic clothing needs are loose and

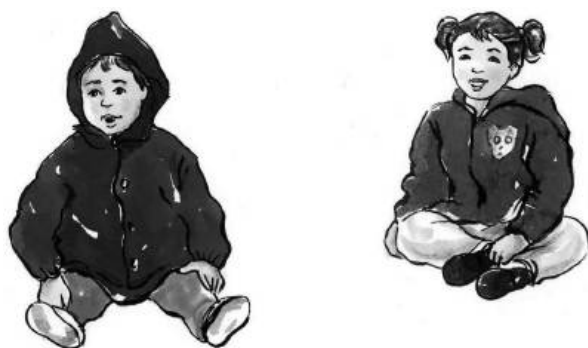


FIGURE 3: COMFORTABLE CLOTHES FOR CRAWLING AGE

non-interfering garments. For clothes to fit loosely, both knitted and bias cut garments are most suited as they stretch allowing for some growth. As this is the stage to develop good posture, care must be taken in selection of right clothes. Too much bulk can hamper motor movement. Light weight garments are preferred over tightly knitted or woven ones. These would be easier during play and will also be comparatively warmer to enmesh air, specially in winters. Do not make children wear too many clothes. The clothes should be made of suitable fabric, i.e., one that is soft, smooth and does not collect soil readily. They should be easy to care for, i.e., wash and iron. Some fabrics like knits and seersuckers (crimped striped material) are excellent as they do not require ironing. Some cottons and rayons are wrinkle resistant as they are treated with special finishes. As children spend most of their time playing, their clothes may require frequent changes as these would get soiled. It is thus important to look at the feature of convenient openings in the garment to slip off and put on easily.

Most suitable garments for this age are rompers and sun-suits made from knitted or woven material.



FIGURE 4: APPAREL DESIGNS SUITABLE FOR CRAWLING AGE

While selecting these garments it is important to keep in mind the features of size and looseness so that the garment does not come in the way of the child's movements. During the crawling stage, soft-soled shoes may be worn if protection from the cold is needed. Training pants are often worn when toilet training begins. These are made of fabrics that fit snugly at the hip.

Toddlerhood (1–2 years)

If you observe a few children in this age-group and you will notice that they are very active. They need freedom to play indoors as well as outdoors. They want to do most of the things themselves. Now as they start walking, they want to reach out for anything they see. At this stage shoes or footwear become a very essential part of the clothing. The correct fit in shoes and socks for a small child is essential for foot comfort and health. The principle clothing concern in the toddler age is the selection of shoes. When walking begins, flexible soled shoes with rough soles of $\frac{1}{8}$ inch thickness are worn. These may be without heel or a slight heel, and should be full and puffy in the toe area.

Shoes should be selected and fitted carefully because the soft bones of a child's foot may be injured by wrong fitting or badly shaped shoes. One must be sure to consider the length, width, height of toe space and fit of the heel.

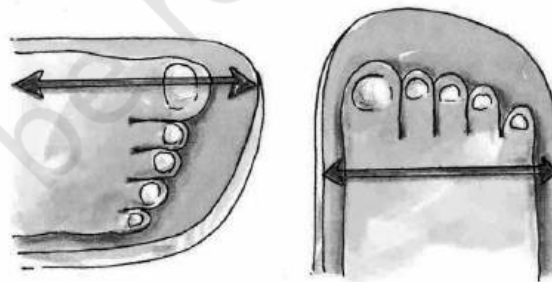


FIGURE 5: CORRECT FIT OF SHOE

For correct fit, they should be fitted on the child. The shoes that fit well help to build good body skills in balance, climbing and running. As children outgrow their shoes quickly, shoes need replacement frequently to avoid foot related health dangers.

For toddlers overalls are the most suitable dresses. These need to be large at the crotch to allow for diapers. By the time children are 2 years old, they want to dress on their own. Then it is important to select garments with self-help features that have been listed earlier.

ACTIVITY 3

Make a size chart of toddlers according to weight and height by measuring four children in this age group, two girls and two boys.

Preschool age (2–6 years)

Like other age groups, health and comfort of preschoolers is an important consideration in selection of their clothes. Clothes have to be selected suitably for these children as they play a lot, and the garments should be able to withstand the wear and tear that the average child will give them. Clothes should be made from light weight materials that are pre-shrunk and are easy to care. Cotton is the most suitable fabric for preschoolers. It is hygienic, absorbent and easy to launder.

The design features on the ready-to-wear preschooler's dress must provide ease in care. Sometimes dresses have trimmings that make the garment difficult to wash and iron. It should be such that it can withstand many launderings and hard wear. Be sure that fasteners and trimmings are securely attached, decorations are easy to iron, and seams are flat and well finished.



FIGURE 6: APPAREL FOR PRESCHOOLERS

Children in this age grow rapidly so it is important to make or buy only few garments that will serve for all occasions and purposes. While buying expensive clothes, look for growth features as discussed in the previous section. This will enable a garment to be worn over a longer period of time.

Preschoolers may have definite preference for colours and styles. They start showing interest in their clothing. Personality plays an important role in children's choice of clothing. Some girls prefer feminine style and like to wear frocks with frills. Preschool boys may not be as dress conscious as girls, but they like to dress like other boys and be comfortable. It has been observed that, at this stage, girls are permitted to wear pants/jeans/shorts like boys, although the opposite is not true for boys.

Individuality of each child should be respected through clothes, even if they are twins. Identical twins should not be dressed alike unless they wish to. It is important that preschoolers be given a chance to express their choice while making a purchase for their clothing.

Self-help features are important for both child and the mother. These features help the child to become more independent and self-reliant. The desirable features of preschoolers' dresses are one piece garment with front long openings that can be easily reached, large buttons, large and comfortable necklines without collar and large armholes.

In brief, clothes for preschoolers should be comfortable to wear, easy to maintain, durable to use that provide allowance for growing needs, look attractive in design and colour, and encourage self-reliance.

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Elementary School Years (6–11 years)

As you read in the previous chapter this is the stage of middle childhood. It is a period of heightened physical activity, and both boys and girls are interested in sports. Clothing now plays an important role in their social and emotional development.



FIGURE 7: SPORTY AND COMFORTABLE DRESSES FOR 5–8 YEARS

They develop likes and dislikes for certain clothes to gain acceptance from their peers, and parents need to understand this developmental change. A sensitive child may experience humiliation and develop lack of confidence if her/his clothes appear very different from those of her/his peers.

Comfortable clothing is essential at this age too. Boys now are very active and prefer wearing rugged clothes that can withstand their rough-and-tumble play. Girls may prefer 'boyish' clothes or may opt for feminine dresses.



FIGURE 8: COMFORTABLE CLOTHING FOR ELEMENTARY SCHOOL AGE GROUP

Most children can select what they want to wear, and resent suggestions from parents.

Fitting is an important aspect to be considered while selecting clothing for school children. A poor fit dress is often discarded by the children. However, some children may select a dress on the basis of style even if it is not comfortable.

To cater to their physical needs the children would require absorbent fabrics so as to absorb perspiration. Most suitable fabrics are cotton, voile, etc. Factors like safety, easy care, growth allowance and suitability to their physique are also important for school going children, just like younger children as has been discussed in the previous sections.

Adolescents (11–18 years)

During adolescent years, growth is very rapid and different parts of the body grow at different rates. In early adolescence, a minimal wardrobe is

advisable at any one time, since the child is going to outgrow the clothes very quickly.

The qualities in clothes that are most important to teenagers are fit and style. They may not be guided by the quality of fabric or its construction.

Adolescents not only wear new styles, they also create new styles. They are earnest followers of fashion and fads. They would like to spend large sums of money for their clothing. Dressing the way peers are dressed or imitating their role models in dress is a sign of their struggle for a sense of identity.



FIGURE 9: APPAREL DESIGNS FOR ADOLESCENTS

When dressing up for sports or workouts, one should make choice of clothes and shoes that are comfortable and prevents such problems as strains, blisters, sprains and sore legs and ankles. Fabrics should be easy to wash, as simple hygiene can save the skin from irritation and rashes. Garment design and fabric should allow for free movement and absorption of perspiration.

14.5 CLOTHES FOR CHILDREN WITH SPECIAL NEEDS

You would now agree that apart from protection, clothing provides an opportunity to the child to develop a sense of autonomy and competence. It communicates impressions of the self to others in the social environment. Sometimes children with disability may have limited physical movement, but they have all the potential for learning and growing.

The task of dressing and undressing is very important for children with special needs. Depending on the nature of disability, some children are able to dress themselves independently. This gives them emotional satisfaction and also a feeling of pride. But if the child is severely disabled or incontinent, she/he is helped by the carer, making the process time consuming and tiresome.

Garments for children with special needs are selected according to the type of disability and the associated difficulties. As **comfort** is the primary criterion, cotton is the most preferred fabric for summer, and velvet corduroy and cotswool for winter. The garments selected should be strong so as to withstand abrasion in case the children use orthotic devices or wheel chairs. Garments should have **reinforcements** at specified areas for calipers and braces. Openings should be easily accessible and easy to fasten. Hence, velcros and zippers with key chains are good choices. Needless to say, garments should be easy to wash. Wearing and taking off should be simple, and so wider necklines, waist belts with elastics, front open plackets and front pockets can be the preferred choices.

It's very important to look at the **aesthetic appeal** of the clothes. They should look like clothes for any child, well-stitched yet easy to wear. They should be appealing in colour and print so that the wearer feels good. However, the best garment is the one that is constructed to cater to the individual needs of the wearer and carer.

On the whole, this chapter informs us that what children wear, i.e., their apparel, has an important role in their personality development. The clothes not only must be appealing to the eye and comfortable to wear, but also ecologically and socio-culturally appropriate.

With this chapter we conclude the unit on childhood. Having studied adolescence in the first two Units, we now move to adulthood from the next section, i.e., Unit IV.

Key terms

Apparel, Clothes, Fashion, Clothing need, Childhood stages, Children with special needs.

■ REVIEW QUESTIONS

1. Give any three reasons for why you wear clothes.
2. What are the factors that affect the selection of clothing for children?
3. Discuss any four clothing needs of children.
4. Why do children's clothing requirements change with age? Discuss the clothing features of children at infancy, preschool age and elementary school years.
5. What should be the features of clothes for children with special needs?

■ PRACTICAL 15

Our Apparel

Theme: Clothing practices related to various occasions

Tasks:

1. Record the different types of apparel used for various occupations, rites and rituals.
2. Find out the significance for their usage.

Purpose of practical: To help the students understand the significance of clothing practices for various occupations, and rites and rituals.

Conduct of practical

- (A) With respect to occupation—
- Observe and interact with people involved in any of these professions – Medicine, Defence, Government Department, Construction or any other.
 - List the fabric type, colour and apparel worn by them.
- (B) With respect to rites and rituals
- Observe and interact with people regarding any of the following events— marriage, child birth, death and initiation ceremonies like *mundan* and *namkaran*.
 - List the fabric type, apparel, colour and designs of the clothing worn by them.
- (C) Prepare an illustrative report with discussion and suggestions on appropriateness of the apparel in terms of fabric, colour, design and texture.

UNIT IV

ADULTHOOD

With the advent of adulthood, the adolescent passes through the portals of what may be termed as the “real world”. One enters the world of higher education, work, and marriage, and gets involved in establishing one’s own family. Hence responsibilities of the individual increase manifold. In this unit you will learn about the major factors that play a role in determining the quality of adult life, these being health and wellness, financial planning and management, maintenance of fabrics and apparel that one uses personally as well as in the home, and appreciation of different perspectives in communication. The unit concludes with a chapter on individual responsibilities and rights, not only for one’s own self, but also in relation to the family and larger society.



HEALTH AND WELLNESS

LEARNING OBJECTIVES

After completing this chapter the learner is able to–

- discuss the importance of health and fitness.
- explain the health concerns and challenges of adults.
- describe the concept of wellness.
- describe the steps to promote and maintain good health and wellness in adults.

15.1 HEALTH SCENARIO IN INDIA

A cursory glance at the health profile of Indians shows that there is scope for substantial improvement. The 2017 report of the World Health Organisation reveals to us the following data:

Total population: 1,339,18013

Life expectancy at birth: 67 years for males, 70 years for females

Mortality Rate under 5 (per 1000 live births): 39

Mortality Rate between 15 and 60 years (per 1000 population): 210 for males, 136 for females.

Source: The World Bank Data 2017,

<https://data.worldbank.org/indicator/SH.DYN.MORT?locations=IN>

Indicators of health status of the Indian population

Ophthalmology: Annual incidence of cataract, the cause of 80 per cent of blindness, is 3.8 million cases.

Cancer: The total number of cancer cases in India was estimated at 924,790 in 2001. This is projected to increase to 1,229,968 by 2011 and to 1,557,800 by 2021.

Cardiovascular diseases: The mortality rate due to cardiac arrest and related causes was estimated at 2.4 million in 1990. With increasing urbanisation the problem is on the rise.

Malaria: Projected to increase from 2.03 million cases in 2001 to 2.62 million cases in 2021.

Hypertension, diabetes and renal diseases: These stress and lifestyle related disorders are on the rise. The diabetic population in India is projected to increase from 40 million of 2001 to 47 million people in 2010. Hypertension is lower in rural areas but on an increase in urban cities.

Source: *The Investment Information and Credit Rating Agency (ICRA) – Report on Indian Healthcare and Technology Information Forecasting and Assessment Council (TIFAC), Department of Science and Technology (DST), Government of India*

These startling facts on health status in India and the projection that “by 2025, it is likely that one in every five Indians will be diabetic”, highlights the need for every Indian to become aware about health and fitness as important dimensions of their lives. Besides diabetes, the increasing prevalence of heart disease, osteoporosis, infectious/communicable diseases such as hepatitis, tuberculosis, AIDS, etc. have become public health problems and need immediate attention at all stages of life.

It is now recognised that there is a shift in the causes of death (mortality) from infectious and communicable diseases in the past, to non-communicable diseases such as diabetes, heart disease or cancer. Experts estimate that the number of persons having non-communicable diseases will increase in the future and there is an urgent need to address this problem, nationwide and worldwide.

It is important to note that many of these diseases were earlier seen in older persons. However, it is of concern today that many of these diseases are now found to occur in youth and younger adults. Another point of concern is that these diseases are not restricted to upper income families alone. Persons from low income families, especially in urban areas, are prone to these problems. It is stated by health experts that most of these health problems are due to unhealthy diets and lack of physical activity.

Therefore, the world’s apex body dealing with health, the World Health Organisation (WHO), has made recommendations to develop a global strategy on diet, physical activity and health. Simultaneously, the Government of India is equally concerned about the increasing health

problems and related issues. As such when diseases increase, there will be tremendous pressure in terms of: (i) providing health care to such persons, (ii) the economic cost to the person and her/his family as well as to the nation, since the government also has to provide health care and treatment facilities for these problems, (iii) adverse impact on the quality of life of such persons, and (iv) promoting and maintaining their health as well as their capacity to function 'normally'.

15.2 HEALTHY PERSONS

Healthy persons are those who are physically fit and active, cheerful in their outlook, have adequate immunity against infections and are not easily fatigued. Research has indicated the benefits of healthy diets, physical activity, individual action and population-based public health interventions. Unhealthy diets generally include consumption of energy dense foods (high in sugar and fat). They are also high in salt. Such foods when eaten in higher amounts than what the body requires and coupled with reduced activity levels across all age groups, especially adolescents and adults, increase risk of non-communicable disease. Diet and physical activity both influence health independently as well as together. Physical activity is a fundamental means of improving physical and mental health. There is a tremendous need to increase awareness and promote better lifestyles to prevent people from having health problems. The risk of developing diseases such as diabetes, heart disease and hypertension in youth and adults is higher among individuals who are overweight or obese. Health professionals commonly use anthropometric indicators (body measurements) to assess nutritional status and risk.

A simple indicator is the Body Mass Index (BMI) that is commonly used to classify underweight, overweight and obesity in adults. This index basically tells us whether a person's weight is appropriate for her/his height (i.e., 'weight-for-height'). It is defined as the weight in kilograms divided by the square of the height in metres (kg/m^2). For example, an adult who weighs 70kg and whose height is 1.75m will have a BMI of 22.9.

$$\text{BMI} = 70 \text{ (kg)} / 1.75^2 \text{ (m}^2\text{)} = 22.9$$

WHO has recommended use of 'cut-off points' for determining whether individuals are underweight, overweight, obese or normal as shown in the Table 1. Thus, if a person's BMI is below 18.5 he/she is classified as underweight. Similarly, cut-off points have been given for three categories 'normal weight', 'overweight' and 'obese' and subcategories within each. For each of these, there is a minimum value and maximum value (a range of values). The health risks are higher as BMI increases because there are

numerous related changes occurring in the body which are detrimental. These include increased body fat (adipose tissue), decreased glucose tolerance, changes in blood cholesterol, etc.

Table 1: The International Classification of Adult Underweight, Overweight and Obesity according to BMI

Classification	BMI(kg/m ²)	
	Principal cut-off points	Additional cut-off points
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	18.50 - 24.99	18.50 - 22.99
		23.00 - 24.99
Overweight	≥25.00	≥25.00
Pre-obese	25.00 - 29.99	25.00 - 27.49
		27.50 - 29.99
Obese	≥30.00	≥30.00
Obese class I	30.00 - 34.99	30.00 - 32.49
		32.50 - 34.99
Obese class II	35.00 - 39.99	35.00 - 37.49
		37.50 - 39.99
Obese class III	≥40.00	≥40.00

Source: Adapted from WHO, 1995, WHO, 2000 and WHO 2004.

BMI values are age-independent and the same for both sexes but to some extent may differ in different populations due to genetic, ethnic and racial factors. Among the various ethnic populations, research evidence indicates that Asians have higher risk at the same BMI compared to others. Hence the WHO has found it necessary to further subdivide the categories (as shown in the third column of Table 1).

Note to Teachers: It is recommended that teachers familiarise themselves with this concept in order to explain it better to the students. Please refer to the notes for teachers at the end of the chapter.

In order to maintain good health and maintain desirable body weight, the following recommendations have been made by health experts for populations and individuals to achieve energy balance and a healthy weight.

Do's and Don'ts for health promoting diets**Do's**

- Increase consumption of fruits and vegetables.
- Increase intake of legumes, whole grains and nuts.
- Match energy intake to energy expenditure.
- Use iodised salt.
- Drink plenty of water.

Don'ts

- Consume too much fat/oil (butter on bread, ghee on parathas), or fried foods, e.g., *pakodas*, *puris*, nuts, *samosas*, etc.
- Consume too much saturated (fats that are solid at room temperature) and trans fats (*vanaspati*).
- Consume too much salt (sodium) from all sources especially processed foods such as wafers, ketchups, sauces, biscuits, pickles, papads, etc.
- Sprinkle salt on cooked food or salad
- Indulge in sweets, chocolates, soft drinks, etc.

15.3 FITNESS

Health is promoted not only by appropriate, well balanced diets but also by physical activity and fitness. There was a brief discussion about fitness in Chapter III in Unit I of Part I on Understanding Oneself: Adolescence. Here, the focus will be fitness at adulthood. As the human body advances in age, certain changes take place resulting in various changes including decline in capacities and body functions.

Exercise and some physical activity are of utmost importance for maintenance of physical fitness and to sustain a healthy life as well as to establish a certain quality of life. Regular exercise burns up extra calories consumed and reduces the likelihood of the surplus calories being converted into fat. Regular exercise makes a person fit. Persons who exercise regularly experience a sense of well-being and sleep better. Exercise also makes the heart and lungs work more efficiently, improving circulation and respiration. Exercise carried out for about 20 minutes at least three times a week is beneficial. Older people should undertake exercise regularly so as to prevent and control several of the diseases like obesity, hypertension, diabetes, etc. In fact youth and young adults should begin to take precautionary health regimen to stave off these diseases at a later stage.

Benefits of exercise in adulthood

- (i) **Exercise and illness:** Exercise reduces the risk of acute and chronic illness through improving body composition, affecting metabolism

and cardio-respiratory fitness. It decreases disability by improving endurance, muscle mass, muscle strength, agility and flexibility. It helps to prevent and treat common, often difficult-to-treat problems seen among older adults such as depression, insomnia, anorexia, constipation, and cognitive impairment.

Exercising regularly yields specific benefits such as:

- Helps to postpone disability by as much as 15 years. Even inactive persons, once they begin to do small amounts of exercise derive considerable health benefits.
- Lower body exercises help to establish/retrain balance in older adults.
- Helps persons who are overweight/obese to lose weight.
- Helps in maintaining desirable body weight.
- Helps to control blood sugar levels and blood pressure.
- It helps to maintain bone mineral density and thus reduces the risk of fractures and disability especially among the elderly.
- Helps to enhance muscle strength in both upper and lower limbs (training for a couple of months can help to increase strength of our lower limbs)

Exercises can be grouped into three broad categories:

- Endurance building/Aerobic exercise
- Strength building/Resistance exercise
- Promoting balance/Flexibility exercise

The benefits of these exercises are summarised in the box below.

Exercise/Activity	Benefits
Endurance building/aerobic exercise including brisk walking, cycling, swimming, football, tennis, badminton	Builds stamina, improves fitness, helps in weight loss or control, improved cardio-respiratory functions, control of blood sugar, prevents constipation, improves sleep, positive frame of mind. The improvement can be seen after a few weeks of regular, fairly, hard exercise, i.e., 30 minutes of aerobic activity every day. However, the level of fitness soon declines if the exercise regime is abandoned.
Strength building/resistance exercise include exercises such as weight lifting, pushups/levitation and specially designed equipments in a gym.	Increases muscle strength and bone mass, helps to firm up the body and improve posture.
Balance/flexibility involves stretching, loosening up and bending such as stretching, yoga is reported to be beneficial in many other ways, climbing stairs.	Helps muscles and joints to perform their full range of movements with ease, helps to reduce stiffness thus keeping joints flexible. Improves balance, flexibility and mobility.

* Yoga is reported to be beneficial in many other ways.

ACTIVITY 1

Pay a visit to a nearby health or fitness or yoga centre or gym and find out from the trainer/teacher or the adult users the benefits of the exercise they do.

There are 1,440 minutes in every day. Schedule 30 of them for physical activity! Make exercising part of the daily routine to ensure wellness in adulthood.

(ii) **Exercise, mental health and well-being:** In addition to the benefits for physical health, there is growing awareness and scientific evidence of its benefits for wellness and mental health. Scientists at Duke University, USA, studied persons suffering from depression for 4 months and found that 60% of the persons who exercised for 30 minutes three times a week, overcame their depression without any medication. Another research study showed that short workouts of 8 minutes could help lower sadness, tension and anger along with improving resistance to disease in healthy people. Many people have found that exercising helps to boost confidence as well as reduce anxiety and stress, all of which contribute to psychological health and well-being. Thus, exercise can be viewed as a wellness activity that prevents physical and mental health problems.

Experts caution that viewing exercise as a punishment can hamper its benefits. On the other hand, exercise should be enjoyed. The physical pain and soreness that one feels in the first few days gradually disappear. In India, yoga and meditation have been traditionally used to achieve mental health and well being. Yogic *asanas* help the body become more flexible. Researchers have shown that yoga also has benefits for conditions such as diabetes and high blood pressure.

During and after exercise, the brain releases substances called endorphins. These are the body's natural painkillers and also increase feelings of happiness and well-being. Today's lifestyles, especially in urban areas and metropolitan cities, are fast paced and more stressful. Hence it is crucial to ensure that every individual takes care of her/his physical and mental health.

In 2002, the World Health Organisation deemed 'Physical Activity' the theme of World Health Day. Since then, April 6th is celebrated as the World Day for Physical Activity. This is an example of a global initiative aimed at promoting health through physical activity across populations.

15.4 WHAT IS WELLNESS?

Wellness is a state of optimal well-being. It means achieving balance and harmony in all aspects of our lives. Wellness is achieved through

the integration of physical, social, emotional, intellectual, spiritual and environmental health. It is a proactive, preventive approach designed to achieve optimum levels of functioning. The concept of 'wellness' is a unique perspective that lays emphasis on facilitating health and well-being. It focuses on human strengths as resources for health, rather than dwelling on problems, needs or weaknesses. Promoting wellness is an approach to prevent ill health or dependency on doctors and medicines.

How does the wellness approach help?

Wellness improves 'Quality of Life' by reducing risk of disease, disability, discomfort and distress throughout the life cycle. It is of paramount importance to promote positive human strengths which in turn can help foster growth and development, harmony and well-being.

The wellness approach requires first and foremost that a person should take responsibility for the quality of one's own life. It begins with a conscious decision to have a healthy lifestyle that will lead to high levels of well-being and life satisfaction.

Wellness is a choice.... a decision made to achieve optimal health.

Wellness is a way of life.... a lifestyle that helps a person to reach one's goals and realise one's potential

Wellness is a process.... a sequence of decisions and behaviours that lead to health, well-being and happiness.

Wellness is holistic an approach to integrate the body, mind, and spirit with the appreciation that all our beliefs, thoughts, feelings and actions greatly influence us in everyway.

Wellness is wholehearted acceptance of self situations and circumstances.... with all of one's weaknesses, strengths and challenges

The holistic approach to well-being is described in the diagram that portrays the dimensions/focal areas for a healthy lifestyle.

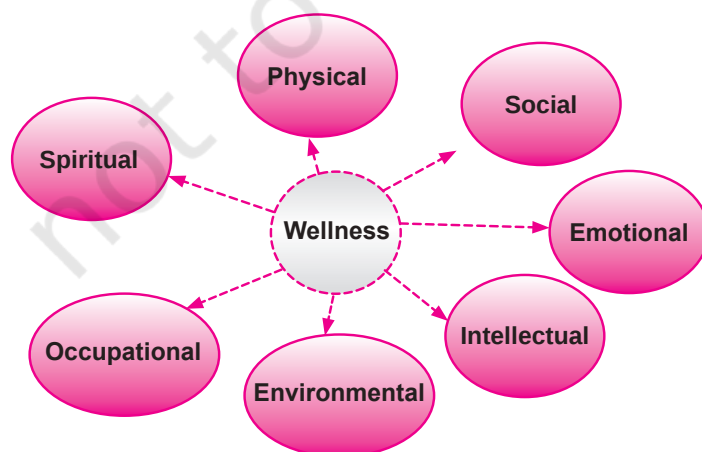


FIGURE 1: DIMENSIONS OF A HEALTHY LIFE STYLE

Wellness has become an important area of research in order to understand it and provide guidelines for practice and promotion. Evidence from numerous studies indicates that persons rated 'high' on the wellness and well-being profile have in common the following qualities:

- High self-esteem, a positive outlook and a sense of purpose
- A strong sense of personal responsibility and commitment
- A good sense of humor
- A concern for others
- A respect for the environment
- A physically fit and an integrated healthy lifestyle
- Absence of addictive behaviours
- A capacity to cope with life's challenges
- An ability to continue to learn
- A capacity to love and an ability to nurture
- An ability for effective communication

Dimensions of Wellness

A 'wellness lifestyle' is associated with good physical health, emotional stability, healthy relationships with family, friends and peers as well as productivity and satisfaction in one's work and workplace.

Social aspect: This emphasises the interdependence with others, making friends and having meaningful, happy, satisfying and stable relationships with others. Social wellness promotes the idea that it is helpful to contribute to the common welfare of our community than to think only of ourselves. The basic tenet is that it is better to live in harmony with others and our environment than to live in conflict with them.

Physical aspect: This refers to deliberate choices for a life style that includes adequate physical activity, well balanced diets and good fitness regimen that will help to achieve and maintain optimum body health and well being. Making healthy lifestyle choices that affect health and quality of life for the present and future is crucial.

Intellectual aspect: This encompasses the extent to which one engages in creative, stimulating mental activities. An active mind is crucial for overall wellness. Being open to new ideas, thinking critically, being creative and curious, and being motivated to master new skills are the keys to intellectual wellness. An 'intellectually well' person uses the resources available to expand his/her knowledge to improve skills along with sharing with others. Benefits include improved job performance, better problem solving, more knowledge and a better chance at being successful in life.

Occupational aspect: This is concerned with the satisfaction gained from one's work and how much one feels enriched by the work. The satisfaction gained is related to a person's attitudes about work, the sense of direction and goals, and a feeling of achievement. Achieving personal

satisfaction and enrichment in one's life through work is required for adults to have a sense of comfort and satisfaction in life. Wellness at the workplace is being increasingly focused upon by employers to ensure better employee health, well-being and productivity.

Emotional aspect: This is closely related to the degree of awareness and acceptance that one has of one's feelings. It includes the extent to which one feels positive and enthusiastic about one's self and life, the capacity to appropriately handle and express one's emotions (both positive and negative), how one copes with stress as well as being able to realistically assess one's limitations. Emotional well-being allows an individual to recognise, understand, experience and express a full range of emotions. In adulthood particularly; living with chronic illness such as heart disease or cancer has mental health implications.

Stress can affect the individual in several ways—contribute to irritability, heart burn, headaches, heart disease and perhaps cancer. Stress cannot be completely avoided. However, one can learn to cope with stress (see Figure 2 in this chapter). Health promotion activities can positively impact overall health and well-being.

Spiritual aspect: This addresses one's continuous involvement in seeking meaning and purpose of life and living, in general in human existence itself. Spirituality generally relates to better mental health, greater well-being and higher quality of life. Physical health and medical outcomes may also be affected. Spirituality can help persons to cope with problems even related to physical health.

Environmental aspect: This deals with the interaction and interdependence between humans and the environment. Awareness of the critical role the environment plays in our individual wellbeing and that all human activity affects the environment is required. Environmental degradation and destruction by human beings is jeopardising the availability of natural resources leading to several major problems that will compromise the quality of human life.

Financial aspect: This focuses on informed decision-making and learning how to manage financial resources wisely, save, invest, and plan for the future. In a monetised society (a society that functions largely on monetary transactions), adequate financial resources are required to achieve health and well-being. Every person has to work hard and be productive to have sufficient finances, not only at the micro-level, i.e., individual and family, but also at the macro-level, i.e., community, region, state and national levels.

15.5 STRESS AND COPING WITH STRESS

Stress is unavoidable in daily life and has both positive and negative connotations in the personal and professional roles. Some stress can

motivate and energise one to perform better and be more efficient. When stress has a positive effect, it is termed 'eustress', when stress adversely affects performance, physical and mental health, it is known as 'distress'. At the simplistic level, any one can assess oneself through the activity given below.

ACTIVITY 2

Ask yourself the following questions:

- Do I often feel irritated/ anxious/depressed?
- Do I feel tired most of the time without sufficient reason?
- Do I worry too much and hence get tense and not be able to sleep?
- Do I often feel very 'fed up' and over burdened?

If the answer to one or more questions is 'yes', it is likely that the person is stressed. Prolonged stress (chronic stress) can damage the body and lead to diseases such as high blood pressure, obesity, heart attack, decreased immunity among others.

Every human being, young or old, male or female, wealthy or poor, in good or poor health will benefit by learning to cope with stress in order to enhance well-being and improve their quality of life. There are various stress management techniques which are indicated in Figure 2. The decision to use one or more techniques is a matter of individual choice.

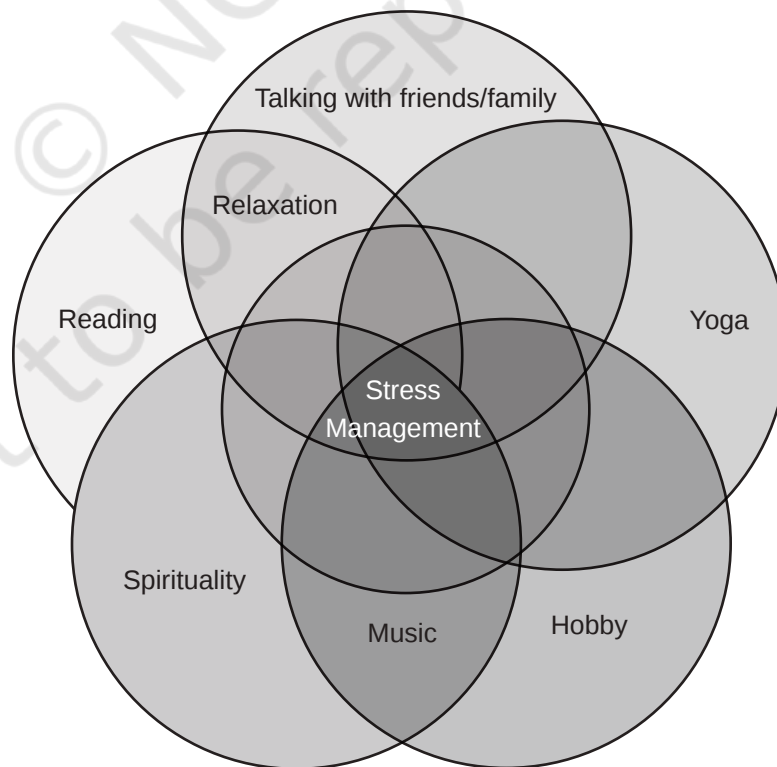


FIGURE 2: SIMPLE TECHNIQUES TO COPE WITH STRESS

Research shows that persons who take care of themselves and manage their lifestyles are healthier, more productive, have fewer absences from work, and make fewer demands for medical services. It is not medical care alone, rather consistent self care which promotes better health and an improved quality of life.

Note for teachers about BMI classification

In the recent years, there has been a growing debate on whether there are possible needs for developing different BMI cut-off points for different ethnic groups due to the increasing evidence that the associations between BMI, percentage of body fat, and body fat distribution differ across populations and therefore, the health risks increase below the cut-off point of 25 kg/m² that defines overweight in the current WHO classification.

There had been two previous attempts to interpret the BMI cut-offs in Asian and Pacific populations, which contributed to the growing debates. Therefore, to shed light on these debates, WHO convened the Expert Consultation on BMI in Asian populations (Singapore, 8-11 July, 2002).

The WHO Expert Consultation concluded that the proportion of Asian people with a high risk of type 2 diabetes and cardiovascular disease is substantial at BMI's lower than the existing WHO cut-off point for overweight (= 25 kg/m²). However, the cut-off point for observed risk varies from 22 kg/m² to 25 kg/m² in different Asian populations and for high risk, it varies from 26 kg/m² to 31 kg/m². The Consultation, therefore, recommended that the current WHO BMI cut-off points (Table 1) should be retained as the international classification.

But the cut-off points of 23, 27.5, 32.5 and 37.5 kg/m² are to be added as points for public health action. It was, therefore, recommended that countries should use all categories (i.e., 18.5, 23, 25, 27.5, 30, 32.5 kg/m², and in many populations, 35, 37.5, and 40 kg/m²) for reporting purposes, with a view to facilitating international comparisons.

This chapter has provided you a fair idea about the importance of good health in adulthood, and the way of maintaining a sense of well-being. You would agree that having adequate financial resources would be an important component of wellness for an adult. However, simply possessing money is not enough. How one manages it and plans its use is equally significant for the optimal benefit of this resource. These issues will be addressed in the next chapter – Financial Management and Planning.

Key terms and their meaning

Wellness: Associated with good physical health, emotional stability, healthy relationships with family, friends and peers as well as productivity and satisfaction in one's work and workplace.

Cut-off Point: Values which indicate the range of normal levels for weight or blood cholesterol or blood glucose and so on. Anything below the minimal value

or above the maximum value becomes abnormal. In other words such values “cut off” the abnormal from the normal values.

Glucose Tolerance: Ability of the body to respond to high intake of glucose (and consequently high levels of blood glucose) by secreting adequate levels of insulin. Insulin helps glucose to enter the body cells and thus reduces glucose levels in the blood. People who are predisposed to diabetes or suffering from diabetes have poor glucose tolerance.

■ REVIEW QUESTIONS

1. Mark the following statements as True or False.

1. You need to be physically active only when you need to lose weight. True/False
2. Physical fitness requires membership in a gym, special equipment and clothes. True/False
3. Without 60 minutes of exercise everyday physical fitness cannot be achieved. True/False
4. Endorphins are chemical substances that make a person depressed. True/False

2. Exercises

- (a) Assess BMI for self and two adults, one young adult and one older adult.
- (b) Group Discussion: Organise a group discussion on “Older adults do not need to exercise”.
- (c) Debate: Organise a debate in the class between groups for and against the statement: “When one is physically fit, it is not necessary to bother about one’s diet”.
- (d) Personal diary: Differentiate between eustress and distress. Keep a record for one week of your eustress and distress states.

3. Group projects

1. Design attractive posters to publicise the importance of wellness and fitness.
2. Collect recipes for snacks that are healthy and nutritious. Make a recipe booklet and share it in the community.

4. Projects for school

1. Organise a walking rally to promote benefits of exercise.
2. The teachers in the school may organise an exhibition of students’ posters to publicise the importance of wellness and fitness for parents and community members.
3. School may organise Health and Wellness week to celebrate the World Health Day.



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FINANCIAL MANAGEMENT AND PLANNING

16

LEARNING OBJECTIVES

After completing this chapter the learner is able to —

- understand the meaning and concept of financial management.
- know the different types of income.
- explain the steps in making family budgets.
- describe meaning of savings and investments.
- discuss the principles of sound investments.

16.1 INTRODUCTION

- (i) **Financial management** in the context of a family simply means management of finances. Finances are all types of income available to a family which include salary, wages, rent, interest, dividends, bonus, retirement benefits and all other forms of monetary receipts. Planning, controlling and evaluating the use of all these types of incomes is called financial management. Its purpose is to give the family greatest satisfaction from the resources at hand.

The quality of living that can be exchanged for financial resources is dependent not only on how much income is available, but more importantly on the regularity and stability of income. Therefore, it is important to learn the skill of managing money as a resource. This chapter will deal with the types of family income, management of income and the steps in making family budgets.

- (ii) **Financial planning** is a component of financial management. The term budget is often used for the planning stage in financial management. When families make budgets, they see to it that the family income is used in a manner that fulfills all the present needs of the family members and also takes care of the long term goals of the family. Thus

families are able to achieve their objectives by optimising the use of their resources. In addition, financial planning minimises wastage of money on non-essentials, thus making families save a part of their income for future use. This is, however, possible when the family monitors its financial plans and evaluates the plans from time to time. Commitment of family members towards the success of the financial plan is very important for it to show any results.

Management is using what you have (resources) to achieve what you want (goals and objectives). Family resources are the resources that are available to the individual or the family at a particular time, which help them reach their family goals. Family resources include human resources such as knowledge, skills, health, time and energy; material resources such as housing, money and investments; and community resources such as the library, parks, community centres, hospitals, etc. In order to ensure maximum utilisation of resources it is important to manage them well.

A family is a consumption unit while being a social unit, and its purpose is to manage the finances of the family for the well-being of its members. Money is one of the important family resources. A family cannot lead a comfortable life without sufficient money. Managing money effectively to meet present needs and future goals is a learned skill. So let us understand what we mean by family income.

16.2 FAMILY INCOME

Family income means the sum total of the income of all types and from all sources of all the family members in a given time period. It can be annual, monthly, weekly or daily income. However, for official purposes, it is considered as the annual income in a financial year which is generally from 1st April to 31st March of the next year.

Income may be in the form of

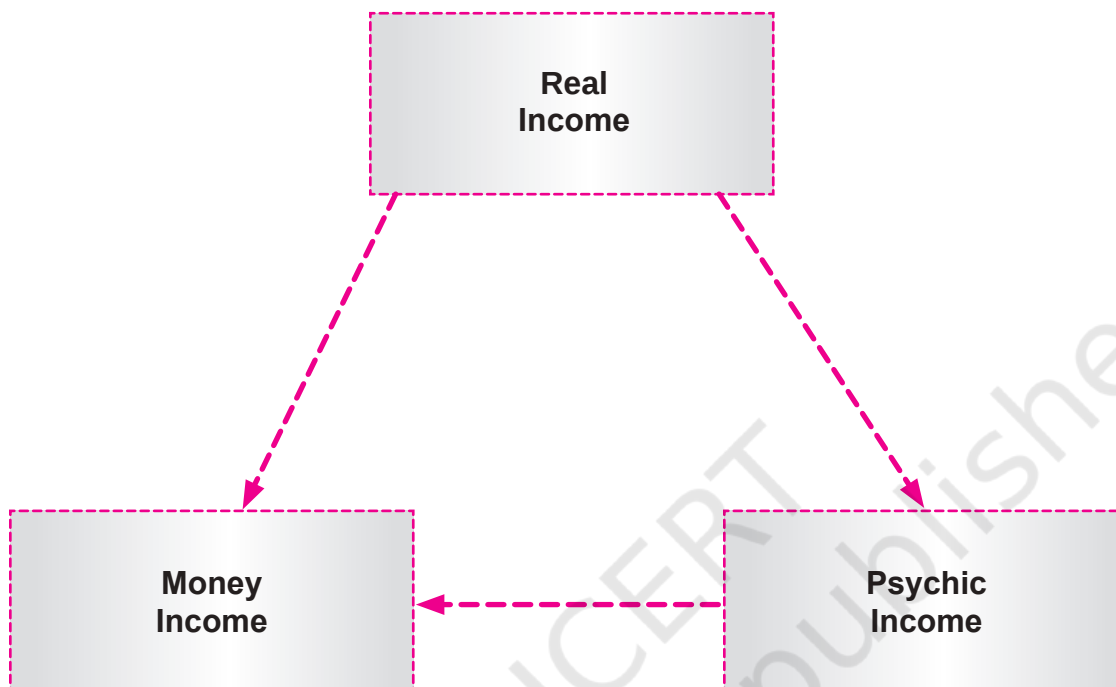
- Wages
- Salary
- Profits from business
- Commissions
- Rent from properties
- Interest on cash loans
- Dividends
- Pensions
- Gifts
- Royalties
- Tips and donations
- Bonus
- Subsidies, Charities, etc.

ACTIVITY 1

Participate in a group discussion in your class on “Communication Technology – a curse or a boon?”

Types of family income

There are three types of family income.



Before we go into the details of different types of family income, let us understand what is money and its functions.

Money is what money does. Two most important functions of money are:

- Serving as a medium of exchange, and
- Measurement of value

Thus money is “anything which is generally acceptable in exchange of commodities and in terms of which the value of other commodities is determined”.

Importance of money

- Money serves as a medium of exchange, thus doing away with the problems of spending time for exchange to materialise.
- Money serves as a standard of value, i.e., a common denominator in terms of which the value of all other commodities is expressed.
- It works as a standard of deferred payments facilitating savings and investments, which are the basis for capital formation, and hence for better standard of living.
- Storage in terms of money is durable for long time periods, facilitating accumulation for investment in production and improved standard of living for the family.

ACTIVITY 2

Identify all the sources of money income available to your family in a month.

- (a) **Money Income** is the purchasing power in rupees and paisa that goes into the family treasury in a given period of time. It comes to the family in the form of wages, salary, bonus, commission, rent, dividends, interest, retirement income, royalties and any other allowances to any member of the family. Money income is converted into goods and services required for daily living, and often a part is diverted into savings for delayed use or for investment purposes.

The frequency and pattern of flow of money income varies from family to family. For example in rural areas agriculture is the main occupation. The income of a farmer is not regular but she/he earns money when she/he sells the crop which may be twice in a year—the rabi and the kharif crops. In contrast, a person having a job will have regular income every month.

- (b) **Real Income** is defined by economists as a flow of commodities and services available for satisfaction of human wants and needs over a given period of time.

This definition has three important points, namely:

- Real income is a flow of goods and services, it is not stagnant.
- It consists of goods and services which might or might not be available with money, e.g., produce from your own land, services of a household.
- There is a time period involved – it may be a month or a year.

Real income is of two types- direct income and indirect income

1. **Direct Income** – consists of those goods and services available to the family members without the use of money. For example, services rendered by family members, like cooking, laundering, stitching, maintaining kitchen garden, etc. A house which is fully paid for and community facilities like parks, roads, libraries also come under direct income.
 2. **Indirect Income** – those material goods and services which are available to the family only after some means of exchange (ordinarily money) has been obtained, e.g., use of money to buy good quality vegetables because it involves one's skill and ability to select.
- (c) **Psychic Income** is the satisfaction that results from the ownership and utilisation of goods and services. It can also be defined as the satisfaction derived from real income. It is difficult to quantify psychic income in terms of rupees. It is a form of hidden income. It is intangible and subjective and the most important in terms of quality of living.

16.3 INCOME MANAGEMENT

Income management may be defined as planning, controlling and evaluating the use of all types of income. Its purpose is to simply get the greatest satisfaction from the resources at hand.

ACTIVITY 3

Identify the different sources of direct income of your family.

No two families, even though they have identical incomes, will have identical needs and desires. Thus every family must devise their own plan of expenditure keeping in mind their goals, needs and desires. For efficient income management it is essential that families recognise and analyse all resources available to them.

16.4 BUDGET

Budget is the most common planning device for the use of money. A budget is a plan for future expenditure. It represents the first step in the managerial process as applied to money. Its success depends upon

- its being realistic and flexible.
- suitability to the group for which it is prepared.
- quality of the control and evaluation steps which follow.

A family budget gives in detail the income and the expenditure of a family for a month or a year. It mentions all the sources of income during the period and also all the items of expenditure under different headings, such as food, clothing, housing, entertainment, travel, education, health and medicine and savings.

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Steps in making a budget

There are mainly five steps in making a budget. They are as follows:

- (i) **List the commodities and services needed** by the family members throughout the proposed budget plan. Group the related goods and services together. The following grouping may be helpful:

- Food and related costs
- Housing
- Household operations – fuel, utilities
- Education
- Transportation
- Clothing
- Income tax
- Medical
- Personal allowances

- Miscellaneous – recreation, house furnishings
 - Provision for future – saving, retirement
- (ii) **Estimate the cost** of the desired items totaling each classification and the budget as a whole. General market trends must be considered while making these estimates. For example, if prices are showing an upward trend, sufficient margin should be allowed to cover such increases.
- (iii) **Estimate total expected income.** It is helpful to list income under two headings – assured and possible income. The budget should ensure that necessities are taken care from the assured income and the 'nice but not necessary' items can be obtained from possible income.
- (iv) **Bring expected income and expenditure into balance.** Sometimes expenses are more than income. There are two ways to bring them into balance. One can either increase the income (for example by, taking up an extra job/work) or cut expenditures (less frequent outings or less expenditure on festivals).
- (v) **Check plans** to see that they have a reasonable chance of success. The plans are checked in light of the following factors:
- The needs of the family have been met.
 - The budget allows for emergencies. A joint fund may be kept aside for emergency period.
 - Solvency is assured. Solvency is the ability to pay bills or debts as they fall due.
 - The national and world-wide conditions have been considered (e.g., global economic recession).
 - The long term goals of the family are recognised.

Advantages of planning family budgets

- Planning enables a family to take an overview of the use of their income.
- Amounts allocated to various categories can be studied in relation to total income.
- The budget helps families use their income to first attain those goals which they consider most important. Spending without a plan frequently results in wastage of income.
- Family members are less likely to be swayed, as they can make rational decisions which are reflective of long term goals of the family.

16.5 CONTROL IN MONEY MANAGEMENT

After planning, controlling is the next step in money management. Control in financial management is usually of two types: checking to see how well the plan is progressing and adjusting wherever necessary.

Checking is important as it tells how one's plans are progressing and where adjustments are needed. There can be two kinds of checks:

- (i) **Mental and mechanical checks:** Mental checks are usually established by breaking the allocations into units which can be related to actual expenditures. For example, Rs. 1,000 may appear to be a large amount to a student, but when one realises that one must purchase a pair of shoes, a new dress for a festival and a few books all at one time, it is obvious that one must take extreme care in the selection and the price in light of the total money available. Thus, in mental checking one visualises clearly the items a specific amount must cover.

A mechanical check is one in which you set aside a certain amount of money in cash to be used for a particular item. For example, many homemakers have a food purse in which monthly allocation for food is kept. All food expenses are carried out from the money in this envelope. Quick disappearance of the money shows how rapidly the money is being spent.

- (ii) **Records and accounts:** Records and accounts show the distribution of money after expenditures have been made. Such records can be quite casual, such as keeping everyday written account or receipted bills, or they can consist of formal and detailed accounts. For a family the purpose of records is to show the distribution of money which has been spent and to compare the amounts spent with the amounts allocated to a particular group of items.

ACTIVITY 4

Identify the ways in which your family keeps accounts of its expenses.

Advantages of record keeping for a family

- Monthly expenditure can be compared with the spending plan and show us where adjustments must be made to avoid excessive expenditure.
- Helps in identifying those categories or sub-categories where expenditure is too high or too low. This in turn enables us to make better future budgets.
- Some record keeping methods need bills and receipts to be maintained. Thus a proof of payment is at hand in case of a poor product or service if one wants to lodge a complaint.

Single sheet method is a simple and flexible method of record keeping. The record of expenses are kept on a single sheet (see Figure 1).

Adjusting the plan is very important to keep it on track. Adjustments may be needed if the original planning was poor because of factors beyond the family's control like emergencies, family going on an unplanned shopping spree or inadequate checking mechanisms which do not tell the family that there is a considerable gap between the plan and its execution.

Evaluation is the final step in money management. The satisfaction derived from expenditures is one of the most important means for

determining the success of a budget. Evaluation is done in light of specific goals such as obtaining fair value of money spent, being able to pay bills when they fall due, providing for future and improving economic status of the family.

Records of expenditures may be kept on a single, double or multiple sheets. This method is simple and flexible. Also the sheet can be tacked on the back of a door or cabinet with a pencil hanging nearby, which makes it convenient. Although the double and multiple sheet methods can be more adequate than single sheet, yet if the single sheet is well worked out it may include essential data. Consider the following example

SINGLE SHEET METHOD FOR THE MONTH OF OCTOBER 2008			
Category	Amount Allocated	Amount Spent	Total
Amount Spent			
1. Food			
Grocery			
Milk			
Fruit/veg.			
Meat – poultry			
Eating out			
2. Housing			
Rent			
Repair			
Loan			
3. Clothing			
Children's clothing			
Adults' clothing			
School Uniform			
4. Education			
Fees			
Notebooks			
Books			
5. Medical			
6. Any other			

FIGURE 1: SINGLE SHEET METHOD

After having learnt about the family income and its management by planning, controlling and evaluating we have a good idea about what we need to do to make optimal use of our resources. The next step would then be **to learn about savings and investment of money so that we can make good use of it in future.**

16.6 SAVINGS

Savings means keeping aside a part of your money or other resource for use in future or for further production. Savings are important for a family to take care of their future needs. Savings are also important for any economy to survive and grow as savings lead to capital formation and accumulation. This happens when savings are put to productive use by starting a business or depositing money in banks and financial institutions which mobilise public savings and use them for productive use.

Savings of a family depend on the ability to save and willingness to save. Ability to save depends on per capita income. Higher income families have a higher potential to save compared to low income families who have little to save after taking care of their basic needs. Willingness to save depends upon the long term goals of the family and how willing they may be to sacrifice some luxuries in the present to take care of the future.

Saving money is not easy. It takes discipline, planning, co-operation and hard work on the part of family members. But saving money is very important for family security and happiness. Saving for saving's sake is futile. Savings have meaning only when the purpose is well-planned and understood by all family members and the money wisely invested for future use.

16.7 INVESTMENT

Investment implies using the money for further production. If savings are put under the folds of a *saree* or kept hidden in a pitcher, it is not going to result in investment. Savings have to be put to productive use in the economic sense to result in investment. Investments may be in two types of assets – physical assets and financial assets. Savings, if put into bank accounts, post offices, or financial credit societies institution, in shares and securities, insurance policies, etc., lead to formation of **financial assets**. They provide financial security to the family and are productive in economic terms. Savings in **physical assets** means using your savings to buy land, property, house, gold, household durables, etc. This kind of investment is not productive in the economic sense of the term and does not result in capital formation. However, it usually has long term positive returns.

ACTIVITY 5

Identify the various avenues of savings and investments that your family is making use of.

Principles underlying sound investments

Families spend a lifetime accumulating savings. These savings must be invested wisely to give the family good returns and ensure that the money is safe and available to them when they need it.

Let us now discuss the principles underlying sound investments.

- (i) **Safety of the principal amount:** The principal itself has to be safe if it is to earn interest or dividends. This principal is the most important factor for sound investing. Safety can be ensured by
 - Owning securities in both government and private sectors like National Savings Certificate (NSCs), Public Provident Fund (PPF), *Kisan Vikas Patra* (KVPs), fixed deposits in banks
 - Investing in companies in different geographical zones
 - Owning shares and bonds in different companies
 - Studying the market reputation of the issues of the securities
 - Varying the kind of securities purchased – agricultural land, real estate, stocks, bonds, fixed deposits, etc.
 - Understanding prevailing phase of business cycle
- (ii) **Reasonable rate of return:** In general, the higher the rate of return on an investment, the greater the risk, i.e., safety of principal and rate of return are inversely related. To some people, particularly those depending upon investments as their major source of income, regularity of income is more important than a higher but fluctuating return. This is determined by the selection of securities. Therefore, before investing money one should compare the rate of interest and the associated risk under various schemes and options.
- (iii) **Liquidity:** It is the ability to convert the securities into cash without sacrificing value. The more liquid an investment is, the higher is its price, or in other words, the lower the return to the investor. Hence income and liquidity must be balanced.
- (iv) **Recognition of effect of world conditions:** Changes in business trends will affect both the amount of protection needed, the ease of providing it and the methods chosen to provide it. Considering the long time business trends, a family must recognise the effect of their savings on the entire economy. Their willingness or unwillingness to invest in business enterprises at various stages in the cycle may well have an effect in reducing the extremeness of the cycle.
- (v) **Easy accessibility and convenience:** While choosing an investment option for family funds, one must consider the knowledge required for its success. A family may choose an investment which might result in loss simply because they did not foresee the problems involved in the management of security or property acquired.
- (vi) **Investing in needed commodities:** The date on which an investment is to mature is important for a family that plans to have funds available for a known future need. Therefore, while investing money, families should purchase securities of lengths and durations so that they mature close to the time of the envisaged need or needs, e.g., for the child's higher education.

- (vii) **Tax efficiency:** Investments should be made in those instruments which lead to tax saving. A number of provisions in the Income Tax Act can be used to save taxes. Investment in insurance policies, Employees Provident Fund, PPF, etc., have built-in tax rebates with a specific ceiling limit.
- (viii) **After investment service:** While selecting an investment instrument, customer care or customer service must be a critical decision-making factor. Good customer care includes easy encashability of securities, good communication network, timely dispatch of interest or dividend warrants, timely disbursement of the due amount after completion of investment period, keeping the customer posted about changes in the policies, interest rate, etc. A customer-friendly company provides the needed support and protection to the investor as and when required.
- (ix) **Time period:** The “lock in” period is a critical aspect to be considered before deciding on an investment. The longer the period of investment the higher is the rate of return. For example in most fixed schemes the rate of interest is higher for long-term deposits compared to short-term deposits. Thus the investor must choose between a higher return with a longer waiting period or a comparatively lower return for a short lock-in-period, based on the needs and requirements of his/her family.
- (x) **Capacity:** One should not invest beyond one’s capacity so that the investments can be free of undue hardships. It is important to balance present needs with future needs and security.

16.9 SAVINGS AND INVESTMENT AVENUES

Following is the list of saving and investment options which are available to an Indian consumer:

- Post Office
- Banks
- Unit Trust of India
- National Savings Scheme
- National Savings Certificates
- Shares and Debentures
- Bonds
- Mutual Funds
- Provident Fund
- Public Provident Fund
- Chit Fund
- Life Insurance and Medical Insurance
- Pension Schemes
- Gold, House, Land

ACTIVITY 6

Visit a bank in your neighbourhood and enquire about the various facilities, investment and savings options available to the customers.

16.10 CREDIT

In spite of the fact that families save and invest money income they have to sometimes use credit to meet their needs or obligations. That is, families make use of credit to avail of goods and services whose initial cost is too high to bear at once. The word credit comes from the Latin word 'CREDO' meaning 'I believe'. Credit means getting money, goods or services in the present and paying for them in the future. In reality, it is a process of postponed payment, a privilege for which we have to sometimes pay a very high rate. At any given time the use of credit increases purchasing power and thus makes possible the provision of more goods or services than the cash on hand would allow. Families should understand the nature and operation of credit since repayment of the amount borrowed, together with interest for its use, must eventually be made.

Need for credit

Families use credit to meet needs or obligations. The need may be real or imaginary. If the initial cost of a commodity seems too large to save before the purchase is made, families borrow money to possess the commodity immediately; for example, land. The cost of the good is spread over a long period of time and the family can have the advantage of using the good during the payment period. Another reason for borrowing is to meet family emergencies like sickness of a family member. Families also borrow to meet obligations like marriage of children or performing rituals during death of a member. A self-supporting and self-sufficient family can always use credit in emergencies and do so with a feeling of confidence.

A lender will make a loan only when she/he believes that the borrower will repay the money she/he borrows. The lender may be a bank or any other financial institution. Their decision to give credit to individuals and families is governed by 4C's, which are mentioned below.

4 Cs of credit

Character means willingness and determination to repay a loan as agreed, even though it is at greater cost and inconvenience than the borrower anticipated.

Capacity means the ability to meet an obligation when it is due. Ordinarily capacity depends upon income. It is important to understand that the capacity of family to repay a loan depends not so much upon total income as upon the available margin over and above necessary expenses. The capacity of a family to repay a loan is determined by the difference between what the family receives and what it spends.

Capital means net worth. A family's capital is determined by the difference between what it owns and what it owes. The existence of this capital provides a margin of safety for the lender, since if the family's

income proves to be inadequate to repay the loan, it can draw upon its invested capital.

Collateral consists of specific units of capital which are pledged as security for a given loan. Usually these units are placed in the possession of the lender with the understanding that if the borrower fails to pay the loan as agreed, the lender is to reimburse himself in so far as he can from the sale of the pledged collateral.

Commercial banks, cooperative banks and agricultural banks, credit unions, etc., are the main source of taking credit. One can also take credit from self-help groups of which one is a member. The members of this self-help group contribute some money every month and make a corpus amount. From this credit is given to the needy member based on her/his requirement and repaying capacity. These groups have members known to each other and hence no collateral is needed and the interest rate is nominal.

Before using credit the family should consider not only satisfaction gained by possession of the good or service but also future adjustments in family budget imposed by repayment of the loan. Managing credit includes determining when to use credit and when its use has become excessive. Credit is a useful resource when handled with an understanding of its potential and its cost.

If used indiscriminately credit can be disastrous for a family. Avoiding use of credit and taking credit at the lowest possible cost should be the first target for most families.

Let us conclude this chapter with an understanding that money and other financial resources can be multiplied and optimally used if certain measures, mentioned in the chapter, are adopted. As adult members of family, most people have to take care of many things. One such area in daily living is care of clothes and fabrics in the home. In fact, one can learn about the care of one's clothes from a young age. Let us read about this in the next chapter.

Key Terms

Financial Management, Financial Planning, Money Income, Real Income, Psychic Income, Family Budget, Savings, Investments, Credit

■ REVIEW EXERCISE

1. Indicate if the following statements are 'True' or 'False'.
 - (i) Budget is the first step in money management.
(True/False) _____
 - (ii) Money serves as a medium of exchange of commodities.
(True/False) _____

- (iii) Profits from business and gifts are a form of income.
(True/False) _____
- (iv) One should first estimate the cost and then list the commodities and services needed while making the budget.
(True/False) _____
- (v) Savings in physical assets are productive in economic terms.
(True/False) _____
- (vi) The trend in business cycle is an important consideration under the principal of safety. (True/False) _____
- (vii) The time period may be ignored while considering and deciding on an investment. (True/False) _____
- (viii) The 4 C's of credit are character, capacity, capital and collateral
(True/False) _____
- (ix) Nature of enterprise is not an important safety consideration.
(True/False) _____

■ REVIEW QUESTIONS

- (i) What do you understand by 'management of finances'?
- (ii) Discuss the different types of income.
- (iii) Discuss the steps in making a budget.
- (iv) What are the controls that can be exercised in money management?
- (v) Discuss the principles underlying sound investments.

■ PRACTICAL 16

Financial Management and Planning

Plan a budget for any festival celebrated in your school. One example under each heading is given.

No. of students: 30

No. of teachers: 5

S.No.	Item		Cost (Rs.)	
1.	Venue arrangement			
	Decoration			
	a) Flowers		100.00	
	b)			

	c)			
	d)			
	e)			
Sub total				
2.	Food			
	a)	Sweets (Prasad)	200.00	
	b)			
	c)			
	d)			
Sub total				
3.	Stationery			
	a)	Coloured paper	200.00	
	b)			
	c)			
	d)			
Sub total				
4.	Miscellaneous			
	a)	Transportation		
	b)	Costumes		
	c)	Gifts		
	d)			
	e)			
	f)			
Sub total				
Grand total				

Note: Strike out that which is not applicable.



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CARE AND MAINTENANCE OF FABRICS

LEARNING OBJECTIVES

After completing this chapter the learner is able to —

- understand the aspects of care and maintenance of different fabrics.
- know the procedure of removing different stains.
- identify the process of laundry.
- describe the role of water, soaps and detergents in laundering.
- describe use and care of the fabric in relation to their properties.

17.1 INTRODUCTION

You learnt in some of the previous chapters about the significance of fabrics around us. They protect and enhance humans and their surroundings. Care and maintenance of fabric products, e.g., clothing, furnishing, or any other use within the household, is very important. Final selection and purchase of any product or material is largely based on its appearance in terms of colour and texture, its quality and its functionality. It therefore becomes very important that these characteristics are retained for the expected life of the material. Care and maintenance may thus include:

- keeping the material free of physical damage;
- retaining its appearance:
 - Removal of stains and dirt without damaging its colour
 - Retaining or refurbishing its brightness and textural characteristics such as softness, stiffness or crispness
 - Keeping it free of wrinkles or retaining creases or removing wrinkles and adding creases where required

17.2 MENDING

Mending is the general term we use when we try to keep the material free of damage occurring in normal use or due to accident. It includes the following.

- Repairing cuts, tears, holes
- Replacing buttons/fasteners, ribbons, laces or fancy attachments
- Restitching seams and hems if they open up

These are best taken care of as and when they occur. It is absolutely essential that they be attended to before laundering as the strain of washing may lead to greater loss to the fabric.

17.3 LAUNDRY

Every day care of the fabrics generally consists of washing to keep it clean and ironing to get a smooth wrinkle free appearance. Many materials often require special treatments to get rid of accidental stains, overcoming the grayness or yellowness that occurs due to repeated washings and adding stiffness or crispness. Laundering includes — stain removal, preparation of fabrics for washing, removing dirt from clothes by washing, finishing for its appearance (blueing and starching) and finally pressing or ironing for a neat appearance so that they can be stored ready for use.

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Stain Removal

A stain is an unwanted mark or colouration on a fabric caused by contact and absorption of foreign matter, which cannot be removed by normal washing process and requires special treatment.

In order to use the right procedure for removing the stain, it is important to identify the stain first. Identification may be done on the basis of colour, smell and feel. The stains can be classified as:

- Vegetable stains:** tea, coffee, fruits, and vegetables. These stains are acidic by nature and can be removed by alkaline medium.
- Animal stains:** blood, milk, meat, eggs, etc. These are protein in nature and removed by detergents in cold water only.
- Oil stains:** oils, ghee, butter, etc. These are removed by the use of grease solvents and absorbents.
- Mineral stains:** ink, rust, coal tar, medicine, etc. These stains should be washed first in acidic medium and then in alkaline medium
- Dye bleeding:** colour from other fabrics. These stains can be removed either by dilute alkalis or acids depending on the fabric type.

Removal of Stains – General Considerations

- Stain is best removed when fresh.
- Identify the stain and use the right procedure for its removal.
- For unknown stains, start with a simple process and move to a complex one.
- Repeated use of milder reagent is better than one time use of a strong agent.
- Wash all fabrics with soapy solution after stain removal to remove all traces of chemicals from it.
- Dry fabrics in the sun as sunlight acts as natural bleach.
- For delicate fabrics try out the chemicals on a small portion of fabric; if they damage the fabric, do not use them.

(i) Techniques of stain removal

- (a) Scraping: built up surface stains can be scraped lightly using a blunt knife.
- (b) Dipping: The stained material is dipped into the reagent and scrubbed.
- (c) Sponging: The stained area is placed on a flat surface. The reagent is applied with a sponge on the stained area and absorbed by the blotting paper laid underneath.
- (d) Drop Method: The stained cloth is stretched over a bowl. The reagent is put on it with a dropper.

(ii) Stain removers/reagents for stain removal: The various reagents used for stain removal should be used in liquid form and in concentrations recommended for their use. These reagents can be grouped as follows:

- (a) Grease solvents: Turpentine, kerosene, white petrol, methylated spirit, acetone, carbon tetra chloride
- (b) Grease absorbents: Bran, Fuller's earth, talcum powder, starch, French chalk
- (c) Emulsifiers: Soaps, detergents
- (d) Acidic reagents: Acetic acid (vinegar), oxalic acid, lemon, tomato, sour milk, curds
- (e) Alkaline reagents: Ammonia, borax, baking soda
- (f) Bleaching agents:
 - Oxidising bleaches: Sunlight, sodium hypochlorite (javelle water), sodium perborate, hydrogen peroxide
 - Reducing bleaches: Sodium hydrosulphite, sodium bisulphate, sodium thiosulphate

Table 1: Common stains and the method of removing them from cotton fabric

Stain	Method of removal
Adhesive Tape	• Harden with ice, scrape off, apply any solvent
Blood	• Fresh stain – wash with cold water • Old stain – soak in salt solution, rub and wash
Ballpoint pen	• Keep a blotting paper under it and sponge with methylated spirit
Candle wax	• Soak in cold water immediately, scrape off, dip in white vinegar, rinse with cold water
Chewing gum	• Apply ice, scrape off, soak in cold water, sponge with a solvent
Chocolate	• Soak in cold water, in hypochlorite bleach (javelle water)
Curry (Turmeric & oil)	• Wash with soap and water, bleach in sun. • Keep blotting paper under fresh stain and iron it. Then wash with soap and water. • Old stains can be removed by soaking in javelle water
Egg	• Wash with cold water, wash with soap and lukewarm water.
Fruits and Vegetables	• Apply starch paste on fresh stain. Then rub and wash. • Use borax, salt and hot water to remove it.
Grease	• Dip in or sponge with grease solvents — petrol, spirit or kerosene oil. Wash with hot water and soap. • Apply starch paste and dry in shade. After doing it 2-3 times it will be removed. • Soak in javelle water and wash with soap and water.
Ink	• Fresh stain can be removed by soap and water. • Apply lemon juice, curd or sour milk and salt and dry. • Javelle water can remove stain. • Rub in potassium permanganate solution and then dip in oxalic acid.
Ice Cream	• Sponge with a grease solvent, wash in hot soapy water.
Lipstick	• Soak in methylated spirit, wash with soap and water. • Rub glycerine, wash with soap.
Medicines	• Dip in methyl alcohol, or in a dilute solution of oxalic acid. Wash with hot water.
Mildew	• Sponge with hypochlorite bleach
Milk or cream	• Sponge with a solvent. Wash in cold water.
Paint or Polish	• Rub with kerosene and/or turpentine oil. • Bleach with sodium thiosulphate.
Rust	• Soak in oxalic acid and rub. • Treat as for ink stain.
Scorch	• Sponge with hydrogen peroxide. Stain will not be removed if fibre has been damaged.

Note:

- (a) *These are the methods of removing stains from white cotton fabrics. Suitable precautions should be taken when applying on other fibres or on coloured materials.*
- (b) *Stain removal is the preparatory step in laundry. It must be followed by washing or dry-cleaning and all traces of chemicals used should be removed.*

Removal of dirt – the cleaning process

Dirt is the term applied to grease, grime and dust jammed between the fabric structure. There are two types of dirt. One, which is held loosely onto the fabric and can be removed easily and the other, which is held tightly by means of sweat and grease. The loose dirt can be simply brushed or shaken off or will be removed by steeping in water. The tightly held grease can be loosened in steeping process, but requires reagents that will act upon the grease to loosen the dirt. There are three main methods of removing grease – by the use of solvents, absorbents or emulsifiers. When cleaning is done by solvents or absorbents it is called **dry cleaning**. Normal cleaning – washing is done in water with the help of soaps and detergents, which emulsify the grease (break it in to very small particles). This is then rinsed with water.

- (i) **Water** is the most valuable agent used for laundry work. There is a certain adhesion between fabrics and water. During steeping water penetrates into the fabric and cause wetting. **Pedesis** or the movement of water particles helps to remove the non-greasy dirt from the fabric. Washing in water alone, with agitation provided by hand or machine, will remove some loose dirt and particulate soils. Increase in temperature of the water increases its pedesis and its penetrating power. It is further beneficial when the dirt is greasy. However, water alone cannot remove the dirt that is not soluble in water. It also does not have the ability to keep the dirt suspended resulting in the removed dirt getting redeposited on fabric. Redeposition of dirt is the major cause of fabric graying over repeated launderings.
- (ii) **Soaps and detergents** are the most important cleansing agents used in laundry work. Soap result from a reaction between natural oils or fats and alkali. If alkali is used in excess it is released when soap is used on the fabric. Synthetic detergents are synthesised from chemicals. Both soaps and detergents are sold in powder, flake, bar and liquid forms. The type of soap or detergent to be used depends on the fibre content, colour and the type of dirt on the fabric.

Both soaps and detergents share a critical chemical property – they are surface-active agents or surfactants. In other words, they reduce the surface tension of water. By reducing this effect water soaks more easily in clothes and removes stains and dirt faster. Surfactants and

other ingredients in laundry detergents also work to keep the removed soils suspended in the wash water so they do not redeposit on to the clean fabrics. This prevents graying of fabrics.

There are some differences in soaps and detergents. Soaps possess a number of qualities that make them preferable to detergents. As mentioned earlier, they are natural products and less harmful to the skin and environment. Soaps are biodegradable and do not create pollution in our rivers and streams. On the other hand, soap is not effective in hard water, which results in wastage. Another shortcoming of soap is that it is less powerful than synthetic detergent and tends to lose its cleaning power over time. An added benefit of detergent is that they can be specifically engineered for each cleaning task and for use in different types of washing machines.

- (iii) **Methods of washing:** Once the soap or detergent has emulsified the grease holding the dirt, it has to be held in suspension till it is rinsed out. Some parts of the fabric may have dirt, which is closely adhering to the fabric. The methods employed for washing assist in these two tasks – disassociating the dirt adhering to the fabric and holding it in suspension. The method selected depends on the fibre content, the type of yarn and fabric construction and the size and weight of the article being washed.

The methods of washing are classified as follows:

- Friction washing
- Kneading and squeezing
- Suction
- Washing by machines

Let us now discuss these methods in detail.

- (a) **Friction:** This is the most commonly used method. This method of cleaning is suitable for strong fabrics like cottons. Friction may be caused by rubbing one part of the garment against another part of the garment with hands. Alternately using a brush over the dirty parts kept on the palm of the hand or on a scrubbing board if the article is big are also examples of friction washing. Friction is not applied on delicate fabrics like silk and wool and on surfaces like pile, looped or embroidery.
- (b) **Kneading and squeezing:** As the name suggests, this method involves gently rubbing with hands of the article in soap solution. Since the pressure applied in this is very low, it does not harm the texture, colour or weave of the fabric. Thus the method can be easily used to clean delicate fabrics like wool, silk, rayon and coloured fabrics. This method would not be effective for heavily soiled articles.
- (c) **Suction washing:** This method is used for articles like towels where brush cannot be used and when it is too big or heavy to be handled

by kneading and squeezing technique. The article is placed in soap solution in a tub and the suction washer is pressed down and lifted repeatedly. The vacuum created by pressing loosens dirt particles.

- (d) **Machine washing:** Washing machine is a labour saving device especially useful for large institutions, like hotels and hospitals. These days a variety of washing machines are available in the market by different companies. The principle behind each is the same. This is to create agitation in the clothes to loosen the dirt. For washing in these machines, pressure is provided by the movement of either the tub in the machine or a central rod attached to the machine. The washing time varies with type of fabric and amount of soiling. Washing machines can be manual, semi-automatic and fully automatic.

Finishing

After washing it is very important to rinse the article in clean water till it is absolutely free of soap or detergent. Very often in the last rinse some other reagents are added which can help to restore the freshness or brightness of the fabric. Other reagents may add to the body of the fabric and improve its stiffness or crispness.

- (i) **Blues and Optical Brighteners:** You must have observed that with repeated use and washings white cotton articles tend to lose their whiteness and become yellow in colour. In case of synthetic or manufactured fabrics and their blends the discolouration is more towards gray.

The use of blues is recommended to counteract yellowness and to restore the whiteness. They cannot remedy the grayness. Blue is available in the market as ultramarine blue (in the form of a fine powdered pigment) and as liquid chemical dye. Right amount of blueing should be used in the last rinse. The powder blue is pasted with a little amount of water and then added to more water. This solution is used immediately, as on standing this powder tends to settle at the bottom and would give patchy results. Liquid blues are easier to use and give more even results. Care should be taken to see that blue is applied to the fabric in a thoroughly wet (but not dripping) condition, which is free of folds or wringing. Move the article in the blue solution for a short duration, remove the excess moisture and place it for drying.

Optical Brightening Agents or Fluorescent brightening agents are compounds with low grade or weak dyes that possess the property of fluorescence. These compounds can absorb light at a shorter wavelength and re-emit them at a longer wavelength. Treating a fabric with an optical fluorescent brightener can give it an intense bright whiteness, which can counteract both yellowness and grayness. They can also be used on coloured printed fabrics. Optical brighteners are sometimes

referred to as whiteners. However, they cannot destroy a colour and therefore should not be confused with bleaching.

- (ii) **Starches and stiffening agents:** Repeated launderings cause loss to body of the fabric, which also loses its gloss and shine. Starching or use of stiffening agents is the most common technique to make the fabric firm, smooth and shiny. This finish not only enhances appearance and texture, but also prevents direct contact of dirt with the fabric. Starching also makes the subsequent washing easier as dirt clings to starch rather than to the fabric.

Stiffening agents are derived from nature, either plants or animals. The most common stiffening agents are starch, gum acacia, borax and gelatin.

- (a) **Starch** is obtained from wheat (maida), rice, arrow-root, tapioca, etc. They are available in powder form in the market and have to be cooked before use. Consistency of starch depends on the thickness of the fabric to be starched. As a stiffening agent it is used only for cotton and linen. Thick cottons need light starching while thin fabrics need heavy starching. Commercially prepared starches available in the market are easy to use and do not necessarily require hot water for preparation.
- (b) **Gum Acacia or Gum Arabic** is the natural gum obtained from the Acacia plant (babool tree) which is available in granulated lumps. The stiffening solution is prepared by soaking it overnight to dissolve it and then sieving it to get a lump free solution. This gives only light stiffening, which is more in the nature of crispness. It is used for silks, very fine cottons, rayons and silk and cotton blends.
- (c) **Gelatin** is easy to make and use but is expensive compared to other homemade starches.
- (d) **Borax** is not really a starch but the addition of a small quantity in the starch solution helps to improve its stiffening action. When the fabric is ironed after starching, borax melts and forms a thin film on the surface of the fabric. This is water repellent in nature and thus maintains the crispness even in humid climates.

Application of stiffening agent depends on the fibre content and the specific use of the article. For personal clothing it is often the user's choice as well. Care has to be taken when applying the starch solution that the correct consistency of the starch is taken and the fabric is in a thoroughly wet (but not dripping) condition. The fabric is kneaded well in the solution, excess squeezed out and dried. When starching dark coloured cottons a small amount of blue or tea concoction can be added to the starch solution so that it does not show up as white patches.

- (e) **Drying:** After the clothes have been washed, blued and starched, they have to be dried, before they can be ironed or stored. The best way of

drying is to hang the fabrics outside in the sun with the wrong side facing out. Sun not only dries the clothes faster but also acts as an antiseptic, and also as a bleaching agent for white fabrics. Delicate fabrics like silk and woollens cannot be hung for too long in the sun, as strong sunlight damages these fabrics. Synthetic fibres lose their strength when exposed to sunlight. These fabrics also tend to turn yellow, which is irreversible. So, it is best to dry these fabrics indoors.

Ironing

After you have washed your articles, you would notice that these articles have wrinkles and undesired creases on them. Ironing helps to get rid of these and creates creases where desired. Good ironing requires three things high temperature, moisture, and pressure.

An iron can provide high temperature. It can be a charcoal iron or an electric iron. The charcoal iron though cheap has certain disadvantages. The coal that is used to produce heat may stain the article being ironed and most important is that the temperature cannot be controlled in this type of iron. Different fibre groups have different thermal properties. Due to this they need to be ironed at their specific temperatures. This can be achieved by using an electric iron, where the temperature can be controlled. Thus, if electricity is not a problem, then an automatic electric iron is the best option.

The second requirement for ironing is moisture. Moisture would be automatically provided if you start ironing your clothes when they are damp after washing. If your articles are completely dry, then you can sprinkle some water on them and roll them in towel, so that moisture penetrates evenly throughout the article. Water can also be sprayed with a normal spraying bottle.

The third requirement for good ironing is pressure. This is provided manually by the movement of the iron over the article to be ironed. Iron is generally moved on the clothes along the length. The articles, which may stretch or lose their shape by the movement of iron, for example, laces should be pressed and not ironed. Pressing involves keeping the hot iron at one place on the cloth, then lifting it and then keeping it at another place on the cloth. Pressing can also be used for setting of any folds like creases, hems, pockets, plackets and pleats.

The table that one uses for ironing should be rightly padded, and yet firm. The top should have an even surface and should be of such size and height that it is comfortable for the worker. These days padded ironing boards are available in market. If these are not available, then on any leveled surface 3-4 layers of some thick fabric can be spread and used as a surface for ironing.

After ironing the articles are either given specific folds or are placed on hangers depending upon the storage space available. It is important that they are available in the finished state when required for use.

Dry-cleaning

Dry-cleaning can be defined as the cleaning of fabrics in a non-aqueous liquid medium. The important difference between dry and wet solvents is that while water is absorbed by the fibres, which causes shrinkage, wrinkle formation and colour bleeding; the dry solvents do not cause fibre swelling. Hence dry-cleaning is a safe method for cleaning delicate textiles. For dry-cleaning, the most common solvents used are perchloro-ethylene, a petroleum solvent, or a fluorocarbon solvent.

Dry-cleaning is generally done in industrial establishments and not at the domestic level. The items are brought to the cleaner's and identified with a tag that includes special instructions. Items are first inspected and treated at a spot board. Because a solvent is used, stains that are water-soluble and other hard-to-remove spots must be treated on the spot board. Customers who identify the stains for the dry cleaner make the cleaning task easier and ultimately improve their satisfaction with the cleaned product.

Additional treatment that many dry cleaners are equipped to do include replacing buttons, doing minor repairs to items, replacing sizing, water repellency and other finishes like permanent creases, moth proofing and cleaning fur and leather. Some dry cleaners also clean and sanitise feather pillows, blankets, quilts and carpets, and clean and press draperies.

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17.4 STORAGE OF TEXTILE PRODUCTS

The weather is not the same all the year round in our country; hence we have clothing to match all temperatures. The need for specific fabrics for specific weather conditions necessitates the storage of those not needed at the particular time. Whatever be the clothes, they need to be clean and dry before they are packed and stored away. Woolens should be brushed well and dry cleaned before they are stored, all stains should be removed and all tears mended. Pockets are to be turned inside out, trousers and sleeves turned up; they must be examined and freed from dust, grit, soot, etc. All clothing should be shaken, brushed, washed, ironed and folded. Pack loosely in cupboards or trunks. Too compact and tight packing may result in permanent creases sets at the folds of the fabrics. The shelves, boxes or closets chosen for storing should be clean, dry and insect free, away from dust and dirt. It is important that the packing should be in an atmosphere of very low humidity. Different fabrics require different care while storage, as each is susceptible to different micro organisms.

17.5 FACTORS AFFECTING FABRIC CARE

The selection, use, and care of fabrics depend on many factors. Fibre content, yarn structure, fabric construction, colour application and finishing are the important factors considered for the product.

Each type of fabric has its own individual characteristics and hence needs specific care.

Fibres of which fabrics are made influence their care requirements, as shown in Table 2.

Table 2: Fibre properties that affect care and maintenance of fabrics		
Fibre	Properties	Care requirements
Cotton & Linen	Strong fibres, stronger when wet, can withstand hard friction	
	Resistant to alkalis, can be easily washed with strong detergents	
	Can withstand high temperatures, if necessary can be boiled	
	Resistant to organic solvents and bleaches, acidic substances weaken the fibre	Acidic reagents used should be rinsed and neutralised
	Gets crushed easily, have to be ironed properly to remove the wrinkles	Needs to be damp for ironing or may scorch
	Fungus and mildew may attack them	Should be completely dry and stored in low humidity atmosphere
	If heavily starched, it can be attacked by silverfish	Need to be de-starched if stored over long periods
Wool	Weak fibre, and when it is wet weakens further	Should be handled gently during laundering
	Easily damaged by alkaline substances	Strong detergents or soaps should be avoided.
	Dry-cleaning solvents and stain removing agents have no deleterious effect.	Bleaches have to be used with care
	When wool is subjected to mechanical action like agitation during washing, they have a tendency to felt and shrink.	Washing in cold water with minimum handling is advised
	Knitted articles in wool can stretch out of shape while washing	An outline of the garment is made before washing and after washing the article is stretched back to the outline.

	Has good resilience and does not wrinkle, may not require ironing	No direct ironing of the fabric, if needed it may be steam pressed
	Wool protein is particularly susceptible to damage by insects like clothes moths and carpet beetles	Repeated spraying with chemicals can prevent the damage during storage; naphthalene balls are effective for prevention of insect infestation
Silk	Strong fiber but it is weaker when it is wet; careful handling is required in washing of silk	Only gentle friction should be used while washing
	Damaged by strong alkalis, organic acids are used in the finishing	Mild detergents should be used for washing
	Dry cleaning solvents and spot removing agents do not damage silk	Bleaches have to be used with care
	Does not stretch or shrink on washing, has medium resilience due to which it wrinkles during use	Needs to be ironed
	Scorches easily if ironed at high temperature using dry heat	It should be thoroughly damp and ironed at low temperature
	Perspiration also damages the fabric	Need to be dry-cleaned and aired properly before storage.
	Silk gets weakened if exposed for long time to sunlight	Should not be dried in sun
	Resists attack by mildew and bacteria but are eaten by carpet beetles	Should not be stored if soiled
Rayon	Strength of most of the rayons is relatively low and further decreased when the fibers are wet	Require careful handling in laundering
	Chemically identical to cotton, but may be damaged by strong alkalis	It is safer to use mild soaps and detergents
	It is resistant to dry-cleaning solvents and stain removing agents	
	Rayon shrinks on washing	Care has to be taken while laundering
	Fabrics made of rayon tend to wrinkle and stretch easily as their elastic recovery and resilience are low.	However, it is easy to iron
	Mildew and silverfish are harmful to rayon, they are subject to harm by the rot producing bacteria	Should be stored in absolutely clean and dry condition and atmosphere.

Nylon	Very good strength, retains much of its strength when wet	It requires no special care
	Is not affected by alkalis but acids may destroy the fiber	Should be rinsed well if acidic reagents are used
	Dry cleaning solvents, stain removing agents, detergents and bleaches can be used safely.	
	Can absorb dirt from other soiled articles	Should be washed separately
	Does not absorb water and therefore dries up quickly	
	Sunlight is destructive to nylon and causes a marked loss of strength after extended exposure.	Not recommended for window curtains or draperies
	Nylon is highly resistant to attack by most insects and microorganisms	
Polyester	No loss of strength when polyester is wet; can be easily washed	
	Good elastic recovery and resilience	Does not require hot ironing
	Develops small balls in its surface, which cannot be removed.	
	Moisture regain of polyester is very low, i.e., it does not absorb water easily.	Accounts for discomfort during hot climates
	If oil drips or drops on this fabric, it refuses to part with it.	Oily stains need to be handled carefully
	It is resistant to microorganisms and insects	
Acrylic	Strength is similar to cotton	Can be washed easily without any special care
	Has high elongation with good elastic recovery, so it does not get wrinkled easily	
	Moisture regain of acrylic is low and the fabrics dry quickly	
	It has good resistance to most alkalis and acids and most of the dry-cleaning solvents do not damage the fiber.	
	The fibers have excellent resistance to sunlight, all types of soaps, synthetic detergents and bleaches. It is not affected by moths	
	It catches fire readily and unlike other synthetic fibres continues to melt and burn	Care to be taken; can prove hazardous for children

Yarn structure

Yarn structure (twist or type of yarn) may affect maintenance. For example yarns with high twist would shrink or novelty and complex yarns may catch or snag or get abraded. Blended yarns would mean that both fibre contents would have to be taken care of. You cannot use very hot water when polyester is blended with cotton since it would shrink, however it would not wrinkle much and therefore easier to iron.

Fabric construction

Fabric construction is closely related to maintenance. Simple closely woven fabrics are easy to maintain. Fancy weaves — satin, pile, or those with long floats may snag during washing. Knitted fabrics stretch out of shape and may thus require re-blocking. Sheer fabrics, laces and nets as also felts and non-wovens have to be handled carefully.

Colour and finishes

Colour is an important aspect of care. Dyed and printed fabrics may lose colour during cleaning and may stain other materials. The colour of the fabric may be tested before use and proper care needs to be taken in its use.

Many of the finishing treatments alter the behaviour of the fabrics, which may improve or cause problems. Some of the finishes may require renewal after every wash.

Thus, we can conclude that fibre content, yarn structure, fabric construction, colour application and finishing are the important factors considered for all fabric products. They combine to determine the appearance, comfort, durability and maintenance requirements. The importance of appearance, comfort, durability and maintenance are relative. It becomes our responsibility to evaluate the qualities of a fabric in terms of its ultimate end-use and then make the decisions concerning its use and care.

17.6 CARE LABEL

The care label is a permanent label or tag containing regular care information and instructions that are attached or affixed in such a manner that it will not separate from the product and will remain legible during the useful life of the garment.

Washing Instructions on care-labels	
Washing Instructions	Meaning
89° For 29° C 	Use cold water or set temperature of machines at cold
90°-110° For 32°-43° C 	Use warm water or set temperature of machine at warm
150° For 60° C 	Use hot water or set temperature of machine at hot
WASH CYCLE	
Delicate cycle	Time of agitation is reduced and speed of agitation is slow
Wash separately	Wash like colours together
Wash inside out	Reverse the garment before washing
Warm rinse	Use warm water for rinsing
Cold rinse	Use cold water for rinsing
Do not spin	Do not put in a spinner
Do not wring	Do not twist the garment
Hand wash	Wash by hand, kneading and squeezing method
Machine wash 	Can put in machine for washing
DRYING	
Tumble dry 	Can dry in a front loading machine (the clothes spin clockwise)
Drip dry	Dry for short while without wringing the water (used for synthetics)
Line dry	Hang on a drying line
Dry flat	Dry on a flat surface (used for woolens)
Dry in shade 	Do not dry in sun (for coloured clothes)
PRESSING AND IRONING	
	Set temperature of iron at 210° C (hot)
	Set temperature of iron at 160° C (moderate)
	Set temperature of iron at 120° C (low)
	Do not iron
BLEACH 	Chlorine bleach
	Do not bleach
DRY CLEANING	
	Use all solvents
	To be dry cleaned with only white spirit or chloroethylene
	Special care has to be taken while dry-cleaning as they are sensitive to dry-clean
	Use white spirit only
	Do not dry-clean

In one of the last chapters that follow this, we once again refer to the significance of communication – just as you read about this on the care labels. The next chapter tells us of the various reasons why communications are received differently by different people.

Key Terms

Mending, Laundry, Stain Removal, Water, Soaps and Detergents, Dry-cleaning, Friction, Suction, Kneading and squeezing, Blues and Starches, Care label

■ REVIEW QUESTIONS

1. What are the different aspects of care and maintenance of fabrics?
2. Define the term 'stain'. What are the different types of stains and what techniques can be used for removing them?
3. Write the steps in removing unknown stains from fabrics.
4. What is dirt? How do water, soaps and detergents combine to remove dirt from fabrics?
5. How does finishing after washing improve the brightness and textural characteristics of fabrics?
6. What is dry-cleaning? What are the types of fabrics where dry-cleaning is recommended?

■ PRACTICAL 17

Care and Maintenance of Fabrics

Theme: Colour fastness of fabrics

Task: Analysis of colour fastness to washing

Conduct of the practical: This type of knowledge will help the consumer make a wise choice for the care to be taken while washing coloured fabrics.

Conduct of the practical

- Take four samples each of coloured fabric and white cotton fabric measuring 2" x 4".
- Join coloured samples with white samples to produce (4" X 4") four samples (ABCD)
- Keep (A) as control sample and treat the samples B C D with already prepared 0.5% soap solution in warm water (40o C), rub gently.
- After five minutes rinse and dry.

- Repeat the process for samples C and D. Wash, rinse and dry.
- Repeat the process with sample D and record the observation.

Observations

Sample	Change in colour of test samples	Staining of white cloth attached
A	Control Sample	-
B		
C		
D		

Make a group of 4-5 students and compare the observations of other fabrics also.

■ PRACTICAL 18

Care and Maintenance of Fabrics

Theme: Study of labels on fabrics and apparel

Task: Analyse the information given on the fabric and apparel labels

Purpose of the practical: The appearance, care, and servicability of garments and other products made of fabrics is a concern for consumers. This information is provided to consumers through labels or hand-tags. The fabric or yardage material has information stamped on one end or on selvage at regular intervals. These labels aid the consumer in identifying their products' properties and in caring for them in an appropriate manner so as to retain their claimed characteristics for a reasonable period of time.

Conduct of the practical: Collect five samples each of labels of readymade garment and 'stampings' on yardage.

- Analyse garment labels with respect to clarity, fibre content, size and care instructions regarding washing, ironing, storage, etc.
- Analyse stampings with respect to fibre content, yarn and fabric description, and finishes applied.



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18

PERSPECTIVES IN COMMUNICATION

LEARNING OBJECTIVES

After completing this chapter the learner is able to —

- know the meaning of and processes within communication.
- analyse the influence of age, education, gender, cultural background and exposure on communication.

18.1 INTRODUCTION

You have learnt about the important aspects of communication in the earlier chapters. Communication is a vital process for all in this information age. How does communication occur? It is a process in which a sender and a receiver are involved. A sender sends a message with some intention. Likewise, the message is received by a receiver according to her/his ability or perspective. The communication process is complete only when the intentions of the sender match with the aptitude of the receiver. If the views of the sender and the receiver match, a common meaning is derived. The perspectives of the sender and the receiver will determine effective acceptance of the message.

There are many factors that determine perspectives about communication. These are: age, education, gender, cultural background and exposure to communication. Let us study how each of these factors influence communication.

Age

Age has influence on communication. As one grows, fundamental changes take place: one is ideational (related to ideas), and the second is structural and material. Ideational changes refer to the changes in **ideas**. For example,

the ideas about career and life are different for an 18-year-old teenager who is thinking of a career, a 40-year-old executive who is settled in her career and a 55-year-old who is reaching the end of his career. **Structural changes** refer to physiological and age-related changes in cognitive functioning. Many faculties are affected with age. Vision is the first faculty to be affected. The other faculties start deteriorating, some slowly and others rapidly. Consequently, how and what one communicates is influenced by age, and messages need to be adjusted and altered accordingly. Let us take an example of older persons. As one grows older, one may begin to experience difficulty in listening. For example, in noisy environments (such as a restaurant where loud music is playing) they often find it difficult to determine who is talking and what is exactly being said. Younger people may not have any such difficulty. Further, the selection of words and style of communication also differ according to age.

Material changes refer to changes in use of material for communication. For example, a teenager prefers a mobile phone to listen to music, or will download it from the internet, whereas, an adult will be comfortable using a record player or a CD player. In rural areas, an older adult will be comfortable listening to the radio. The ease with which the younger generation uses equipments for communication is not matched by older age groups. Thus, communication of older and younger people is bound to be affected by age, and so is communication between them.

ACTIVITY 1

Think about some words or phrases you commonly use at home that your parents disapprove of. What is their objection?

Education

Education broadens the horizon of knowledge. It develops the individual's ability to think and apply knowledge, gives access to information and prepares people for careers. All these benefits enhance one's capacity and scope to communicate. An educated sender is likely to articulate and express her/his thoughts more effectively; if the receiver is equally educated it leads to good communication. For example, when a teacher explains a concept to another teacher, it is at a higher level of cognition than the concept being explained to students. This is so partly due to the differences in educational levels of students and their teachers. Similarly, when concepts like global warming, deforestation, effect of pesticides on crops, consequence of heat on nutrients, etc., are to be explained to farmers, health professionals, home-makers or officers, the vocabulary, information, the strategy and mode of communication need to be selected to suit their levels.

Culture

Culture is a complex whole that includes knowledge, beliefs, arts, morals, laws, customs, language and other habits of human beings as members of society. When we discuss the relationship between communication and culture, it includes the total spectrum of communication such as language, non-verbal communication, customs, perceived values, and concepts of time and space.

Culture varies widely within a country and throughout the world. Variations in culture account for differences in ways of living and expectations from members. We often find that it may not be easy to communicate with persons who are from cultures that are different from our own. Through greater understanding of cultural differences and sensitivity to unknown differences, many problems that arise due to cross-cultural communication can be resolved. Culture is important in business as well. There may be cultural differences in schedule of meetings, holidays, concern for punctuality, rules of etiquette and language usage to conduct business.

People from the same culture will have shared experiences including language, customs, value system, food habits, and so on. Therefore, their communication is facilitated. For example, in India we may not be very used to saying “thank you” in our everyday interactions with family and friends. However, the intonations in the voice or the facial expression would convey that one is thankful. In Western cultures however, not saying “thank you” would be considered ill-mannered. Another common example is the way of addressing people. In India the hierarchical structure defines how one addresses persons who are positioned at a certain level in the hierarchy vis-a-vis oneself. The terms “*aap*” and “*tum*” are used accordingly. In many Western cultures, however, irrespective of the age or position of the person, it is quite acceptable to address people older than oneself by their first name. Interestingly the English language does not have any words that distinguish between “*aap*” and “*tum*”.

ACTIVITY 2

Select any five words in your local language, and request two college students and two older persons to write down their meanings. Study the similarities and differences in their understanding.

Yet another example is of the concept of time. In India if people are invited for dinner to someone’s place and asked to come at 8.00 p.m., they generally interpret it as any time after 8 p.m. Even the person who is extending the invitation is more likely to say, “Come around 8 p.m.”.

However, in many other cultures, like the Japanese, one is supposed to abide by the actual time given. In fact, not keeping to the time is considered rude, and in the workplace it may actually lead to a negative comment on one's assessment report.

Gender

The differences between men and women range from biological to social ones. The extent of biological basis in gender differences is still a heavily debated issue in developmental psychology. Whether the tendencies are biological or learned, there is no denying that differences between men and women exist. Gender and culture intersect in ways that make the distinction between the two almost impossible. Although there are some universal gender stereotypes, culture intervenes to bring about differences in how these are manifested. Thus, it is relatively impossible to understand gender differences in communication without considering cultural context and social history. In certain cultures, men and women are socialised to communicate in different ways. For instance, women are encouraged to be more concerned with social consensus, sharing and caring; whereas, men are urged to focus on information, competitiveness and finding solutions.

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Exposure to new knowledge

Exposure to new software and new technology provides practical insights into long-term social and economic implications of information communication technologies. These include automation in offices, in production, telecommunications, and electronic networks that connect organisations. As you may know, the advancement of communication technology has created new fields such as information management. With exposure to modern technologies, the way one looks at work patterns, shares information and ideas, and networks has changed. For example, with access to the internet, school students are able to do project work with relative ease and their approach to assignments has changed. People in offices communicate through e-mail. Today it has become easier to share one's views on different issues with people anywhere in the world; reading, posting and exchanging information on the internet is one such mode. For example, a teacher wanted to write an article on "Teacher's Day" which falls on 5th September. She did not want to write a routine article. She surfed on the internet and found that Teachers' Day was celebrated in many countries in different ways. With access to the internet she was able to write an interesting and informative article. Children (under 10 years) of today who have access to TV channels such as National Geographic and Animal Planet get a lot of information on animals, their habitat,

habits, and life patterns. Sensitising people to problems related to wastage of water, environment degradation, hygiene, etc., can be done effectively through exposure to media. Thus, as you would have noted perspectives in communication will continue to change and new ideas and knowledge will be added.

We have now reached the end of the textbook on Human Ecology and Family Sciences. The last chapter that follows expects you to reflect on the responsibilities and rights of individuals such that these not only lead to their own well-being, but also that of their family and society.

ACTIVITY 2

Given below are a few situations. Study them and identify the factors that led to a different understanding for the sender and the receiver.

1. In a film appreciation class, the teacher had selected a Hindi film “*Hari Bhari*” by Shyam Benegal as an example of good cinema. The students did not feel the same way. They felt that “*Dilwale Dulhania Le Jayenge*” was an excellent movie. Why so?
2. A family was deciding where to go for an outing on a week-end. For the teenage children a nearby hill station was the perfect place for the outing, whereas, the grandparents preferred to go to a historical monument or visit temples.

Why was the week-end outing perceived differently by the children and the grandparents?

3. Nanda, a student of Class X was engrossed in the class, listening to the teacher Shri Pathak. Suddenly she said, “Sir, your screw is loose”. The whole class burst out laughing.

Shri Pathak said, “I do not approve of what you just said. Do you not have manners”?

Naturally, the teacher was angry. Nanda was serious, she did not realise why she received such reactions from her classmates and the teacher. She was summoned by the teacher and asked to explain.

Nanda: Sir, the screw of your spectacle had become loose, so I thought I’ll tell you otherwise the eye glass will fall down.

Shri Pathak: Oh! I did not realise this. It’s okay, thanks for telling me.

The class was amused by her reply and in a way relieved that no mischief was intended. The teacher quickly checked his spectacles and set the screw tight.

Question: In the above example there was a difference in the perspectives of Nanda and Shri Pathak which caused a misunderstanding. What were their perspectives?

Key Terms

Perspective, Communication, Rapport talk, Report talk, Culture

■ REVIEW QUESTIONS

1. Describe the role of culture in determining perspectives in communication.
2. How do age, gender and education influence the communication process?

■ WEBSITE FOR REFERENCE

<http://www.aging.utoronto.ca/node/95>



11137CH19

INDIVIDUAL RESPONSIBILITIES AND RIGHTS

19

LEARNING OBJECTIVES

After completing this chapter the learner is able to —

- discuss the interface between responsibilities and rights.
- analyse one's own responsibilities towards self, family, community and the larger society.

19.1 INTRODUCTION

You must have read about rights and responsibilities of individuals in different contexts. Let us begin with a brief recapitulation.

All individuals have the right to life, liberty, security, equality and dignity. These rights are enshrined to every man, woman, youth and child irrespective of their caste, race, colour, sex, religion, nation or place of origin or habitat, rural-urban differences or socio-economic backgrounds. The rights are enforced, either by individual or collective force or through mutual negotiations and help in the form of written or unwritten social contracts.

Rights and freedom do not exist in a vacuum or by mere belief. All freely exercised rights and freedom are contingent on people recognising these rights and supporting their implementation. Mutual and reciprocal respect and recognition among human beings is crucial and remains the basic principle for the protection of all types of rights. Rights and responsibilities are corollary to each other.

“I learned from my illiterate but wise mother that all rights to be deserved and preserved come from duty well done” — Mahatma Gandhi.

Every right gives rise to a corresponding duty.

In the present times, we are becoming increasingly conscious about our rights, which is a positive development. Many non-government

ACTIVITY 1

Conduct a brainstorming session on the following thought

"It has always been a mystery to me how men can feel themselves honoured by the humiliation of their fellow beings."
– Mahatma Gandhi

organisations (NGOs) are involved in efforts to educate people about their rights and ways to assert them. However, as we become aware of our rights, at the same time we also need to become sensitive and concerned about our responsibilities.

Individual rights for adults should and are always accompanied by responsibilities. If one values one's own needs, interests, safety, feelings, wants, or the whole self and expects every part of her/his life worth caring for and protecting, She/he is expected to do the same for others. Where rights in general, and human rights in particular, are the resultant of certain essential basic human needs, responsibilities are sincere and committed efforts by an individual made for ensuring the protection of human rights of both, self and others. By fulfilling one's responsibilities properly one can ensure protection of one's own rights as a human being. These are the two sides of the same coin. For example, an adolescent has the responsibility to educate herself/himself and attend to the health of mind and body such that one's own quality of life is enhanced along with that of the family; thereby the adolescent is fulfilling responsibilities towards one's own self and also her/his family.

Although it is of utmost importance to assert one's rights, it is equally significant to ensure that in the process of doing so, one is not violating another's rights. For example, it is the right of every individual to celebrate a wedding or a festival with music. Yet, if the loud music from the "*band-baja*" late into the night is disturbing many people who live nearby, then it is violating their right to a noise-free environment during this time. Do you agree with this? Can you think of examples in which your own rights may be in conflict with another's rights? How can such situations be reconciled?

An important aspect of responsibility is also to question and intervene when one observes violation of another's right. For example, if you observe that a young girl walking down the street is being harassed by some boys and she is trying to protest, what would you do?

Study Figure 1 below and discuss the responsibilities that you have in this stage of your life.

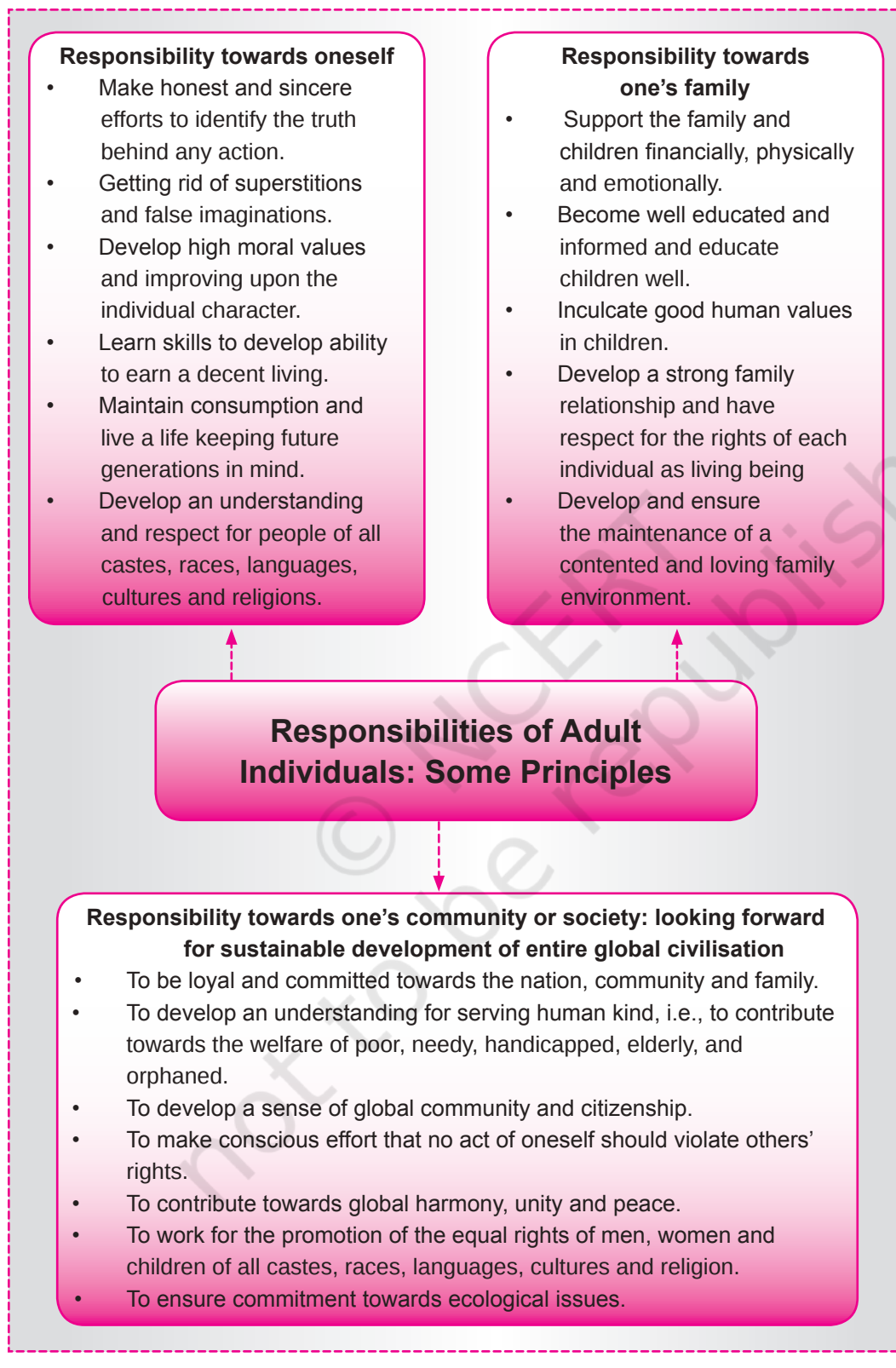


FIGURE 1: RESPONSIBILITIES OF AN ADULT

19.2 DO RESPONSIBILITIES AND RIGHTS DIFFER FROM INDIVIDUAL TO INDIVIDUAL?

There is an extensive list of rights and their corresponding responsibilities in different combinations and permutations. Rights and responsibilities could be between nation states and international agencies, government and its citizens, employer and employee, teacher and student, parents and child, men and women, doctor and patient, consumer and producer or service provider, husband and wife and many more. In any relationship each has different sets of responsibilities. The same is true for rights. In a family, rights and responsibilities are played out in tandem. However, they are mediated by the cultural norms and beliefs, kinship, hierarchical relationships and gender roles of each individual. For example, the rights and responsibilities of an older brother will often be fundamentally different from that of a younger sister. Sometimes, it may also happen that cultural norms and beliefs could come into conflict with individual rights. For example, in Indian families there is the strong belief that children must seek parents' approval in selection of their marriage partner. But what if the parents disapprove of the partner that the adult daughter or son has selected? What should the girl or boy do in such a case? What about the right of an individual to select a partner of one's own choice?

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ACTIVITY 2

Select any two individuals or groups who need to interact or work with each other on a regular basis, and outline their corresponding rights and responsibilities.

19.3 HOW TO PROTECT RIGHTS AND PROMOTE THE SENSE OF RESPONSIBILITY?

We pass through different stages and situations in our life and accordingly our rights and responsibilities change. Newborns and infants obviously have no responsibilities but enjoy all rights of a human being. Responsibilities begin as the individual grows. However, it is necessary to give responsibilities to children from a very young age so that they learn its importance along with an assertion of their rights; with time, it would make them conscious about fulfilling their responsibilities as members of the family, community and society.

As we read in the chapter "Living and Working in a Global Society, in Part I of the book an individual's quality of life is influenced by the different ecological contexts including one's family, the neighbourhood or community and the society in which one grows and lives as well as other societies in

the global world. With advancement in communication technology, we are able to see and hear about the difficulties that people in different parts of our own country as well as other countries may experience. For example, in 2008 we saw how the floods in Bihar washed away entire villages leaving

ACTIVITY 3

Read the following situation and discuss —

“Pushpa is 15 years old. Her father is a labourer and her mother works as a domestic help in several houses. Both of them are out of the house for most part of the day. In the evening Pushpa goes to a house nearby for two hours to do some cleaning and ironing work. She wants to study but is unable to go to school since she is the eldest daughter in the family; hence during the day she needs to stay at home to look after her younger brother and sister”.

The teacher should guide the discussion on the following questions.

Questions

- Is helping the parents to earn a living for the family called child labour?
- Is there any violation of Pushpa's rights? Which rights are being violated?
- What about the responsibilities of Pushpa's parents?
- What about Pushpa's responsibilities towards her family?

many people homeless and destitute. During such natural calamities often there are requests for help in the form of money or clothes or food. Sometimes schools NGOs or even newspapers (e.g., Times of India) and news channels (e.g., NDTV) organise drives for help. What is our response to such initiatives? Do we have a responsibility to contribute in any way that we may be able to?

Key Terms

Rights, Responsibilities, Duties



REVIEW QUESTIONS

1. List any five responsibilities that you have as a member of your (a) family, (b) neighbourhood or community, and (c) society.
2. Explain the relationship between rights and responsibilities.

THE JOURNEY OF HUMAN RIGHTS

It covers thousands of years and draws upon religious, cultural, philosophical and legal developments throughout recorded history. Several ancient documents and later religions and philosophies included a variety of concepts that may be considered to be human rights. Much of modern human rights law and the basis of most modern interpretations of human rights can be traced back to relatively recent history.

Some of the notable documents and declarations among all are:

- *Cyrus Cylinder* of 539 BC, a declaration of intentions by the *Persian* emperor *Cyrus the Great* after his conquest of the *Neo-Babylonian Empire*.
- The *Edicts of Ashoka* issued by *Ashoka the Great* of *India* between 272-231 BC.
- The *Constitution of Medina* of 622 AD, drafted by *Muhammad* to mark a formal agreement between all of the significant tribes and families of *Yathrib* (later known as *Medina*), including *Muslims*, *Jews* and *Pagans*.
- The English *Magna Carta* of 1215 is particularly significant in the history of English law, and is hence significant in international law and constitutional law today.
- The *British Bill of Rights* (or "An Act Declaring the Rights and Liberties of the Subject and Settling the Succession of the Crown") of **1689** made illegal a range of oppressive governmental actions in the United Kingdom.
- Two major revolutions occurred during the 18th century, in the *United States* (1776) and in *France* (**1789**), leading to the adoption of the *United States Declaration of Independence* and the *French Declaration of the Rights of Man and of the Citizen* respectively.
- The *Virginia Declaration of Rights* of 1776 set up a number of fundamental rights and freedoms.
- Declaration of the Rights of Man and of the Citizen approved by the National Assembly of France, 26 August 1789.
- The establishment of the *International Committee of the Red Cross*, the *1864 Lieber Code* and the first of the *Geneva Conventions* in **1864** laid the foundations of *International Humanitarian Law* to be further developed following the two *World Wars*.
- The *League of Nations* was established in 1919 at the negotiations over the *Treaty of Versailles* following the end of *World War I*. The League's goals included disarmament, preventing war through collective security, settling disputes between countries through negotiation, diplomacy and improving global welfare. Enshrined in its Charter was a mandate to promote many of the rights that were later included in the *Universal Declaration of Human Rights*?
- At the 1945 *Yalta Conference*, the Allied Powers agreed to create a new body to supplant the League's role. *United Nations Organisations Charter* in 1945 after the *World War-II*.
- *Universal Declaration of Human Rights* document (UDHR) 1948 and *International Bill of Human Rights* including *International Covenant of Civil and Political Rights (ICCPR)* and *International Covenant of Social, Economic and Cultural rights (ICSECR)*.

■ PRACTICAL 19

Study of Adulthood

Theme: Study of one female and one male adult in the age range 35- 60 years with respect to

- (i) health and illness
- (ii) physical activity and time management
- (iii) diet behaviour
- (iv) coping with challenges
- (v) media availability and preferences

Tasks:

1. Identify a female and a male adult in the age range 35-60 years
2. Collect information with respect to the above aspects by asking them specific questions
3. Analyse similarities and differences in responses and assess whether there are differences in responses due to age or gender.

Conduct of the practical: After identifying the two persons (they could be persons in your family or neighbourhood), ask them the following questions.

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A. Questions related to health and illness

1. Have you had any health problem (s) or illness (es) in the past few years?
2. What treatment did you use? Did you seek medical help or did you use home remedies?
3. How did you manage the illness – by your self or with the support of family members or neighbours?
4. What do you do to keep yourself healthy?
5. Do you have health insurance?

B. Questions related to physical activity and management

1. Briefly describe your routine for the day (from the answer you get to this question, try to find how physically active the person is during the day)
2. What strategies do you use for accomplishing all the tasks that have to be done? Do you schedule specific activities for specific periods of the day? Do you combine activities of a similar nature and do them together (the answer will give you insights about how the person manages time)

C. Questions related to diet behaviour

1. What are the foods that you prefer to eat?
2. Are there any foods which you dislike?

3. In your family are there any foods avoided because of religious or social reasons?
4. What are the major influences on your food behaviour?

D. Questions related to coping with challenges

Each one of us faces one or the other challenging situation in our lives:

1. Can you state some challenging situation that you have had to face?
2. What emotions did you experience as you were passing through the situation?
3. How did you cope with this situation – were you alone in the situation or there were members of the family to help you cope?
4. Do you think that you could have responded differently than the way you did?

E. Questions related to media availability and preferences

1. Which media is available to you for reading/viewing – newspapers, radio, television, films?
2. Which media do you prefer and why?
3. What programmes or items do you like to watch/read in your preferred media?
4. When do you read/watch your preferred media?

Record your finding with respect to each of the above aspects using the following type of tables.

A. Health and illness

S.No.	Health problem/ illness	Treatment used	Self-management of illness/support of family or others	Measures to maintain health	Health Insurance
Adult woman					
Adult man					

B. Physical activity and time management

Physical activity and time management: Adult woman

Time (in hrs)	Activity

Physical activity and time management: Adult man

Time (in hrs)	Activity

Comment on the time management strategies used, based on the principles you have studied.

Adult woman

Adult man

C. Diet behaviour

S. No.	Foods preferred	Foods Disliked	Foods avoided due to religious or social reasons	Factors influencing food behaviour
Adult woman				
Adult man				

D. Coping with challenges

Describe in the following space the challenging situation faced by the two adults and their ways of coping

Adult woman

Adult man

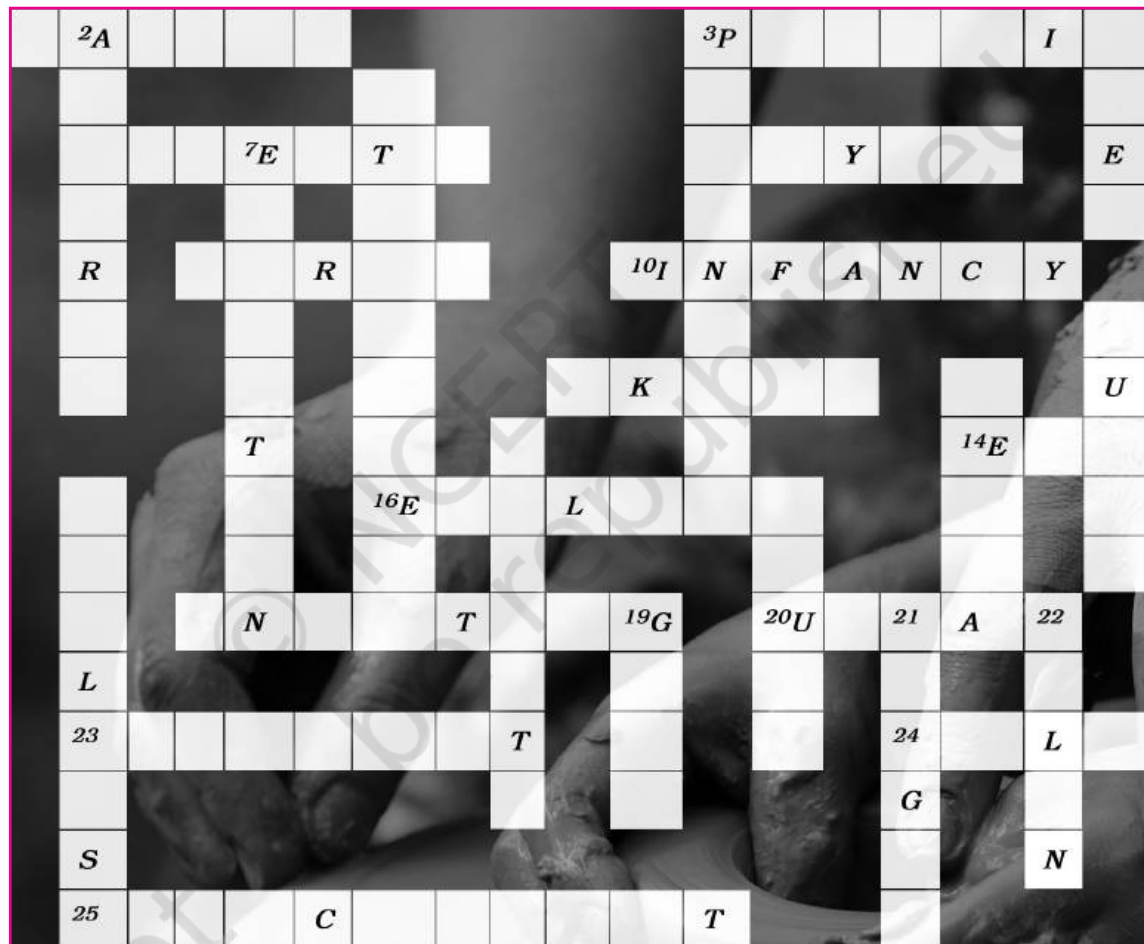
E. Media availability and preferences

S.No.	Media availability	Media preference	Programmes/items/ columns preferred	Time for watching/ reading media
Adult woman				
Adult man				

CROSSWORD PUZZLE

Dear Student,

You have learnt several new terms and concepts in the preceding chapters. Now we shall play a game. This game will be fun as well as entertaining. You are required to read the clues presented on the next page and attempt to fill in the answers in the crossword puzzle given below. One has been done for you.



CLUES

ACROSS

1. A group consisting of parents and their children and/or other members
3. An essential nutrient consisting of amino acids
6. The period or age when a person first becomes capable of sexual reproduction
8. A regenerated semi-synthetic fibre
9. Of or pertaining to village life
10. The period of very early childhood
12. The ability or talent to do something based on practice or knowledge
14. A nourishing, protein rich food
16. A branch of study dealing with the relationship between persons and the environment
18. The act of forming a fabric by looping a yarn
20. Of or pertaining to city life
23. A substance providing nourishment
24. Viscous liquids made of vegetable or animal fat
25. A person's idea about himself or herself

DOWN

2. Clothing, especially outerwear
3. The process of bringing up children in a family
4. A requirement or necessity of a person
5. Sharing a special, emotional bond with another person
7. The act or process of imparting knowledge
11. A sweat foodstuff that provides quick energy
13. A means of communication, like TV, radio
15. The state of being in good health
17. A period between childhood and adulthood
19. The act of giving goods to another person as a token of affection, regard or ceremony
21. A kind of alternative fuel
22. A common synthetic fibre

Answers

Across

1. Family, 3. Protein, 6. Puberty, 8. Rayon, 9. Rural, 10. Infancy, 12. Skill, 14. Egg, 16. Ecology, 18. Knitting, 20. Urban, 23. Nutrient, 24. Oils, 25. Self-concept

Down

2. Apparel, 3. Parenting, 4. Need, 5. Attachment, 7. Education, 11. Sugar, 13. Media, 15. Wellness, 17. Youth, 19. Gift, 21. Biogas, 22. Nylon

REFERENCES FOR FURTHER READING

- Chattopadhyay, K. 1985. *Handicrafts of India*. Indian Council for Cultural Relations. New Delhi.
- Chisti, R.K., and Jain, R. 2000. *Handcrafted Indian textiles*. Roli Books. New Delhi.
- Damhorst, M.L., Miller, K.A., and Michelman, S. O. 2001. *The Meanings of Dress*. Fairchild Pub. New York.
- D'Souza, N. 1998. *Fabric Care*. New Age International Pvt. Ltd. New Delhi.
- Ghosh, G.K. and Ghosh, Shukla. 1983. *Indian Textiles*. Rinehart and Winston. New York.
- Gupta, C.B. 2004. *Management Concepts and Practices* (5th ed.). Sultan Chand & Sons. New Delhi.
- Harnold, K.H. 2001. *Essentials of Management*. Tata McGraw Hill. New Delhi.
- Joseph, M.L. 1986. *Introductory Textile Science*. Rinehart and Winston. New York.
- Joshi, S.A. 1992. *Nutrition and Dietetics*. Tata McGraw Hill. New Delhi.
- Kumar, K.J. 2008. *Mass Communication in India*. Jaico Publishing House. Mumbai.
- Mahan, K.L., and Escott, S.S. 2008. *Krause's Food and Nutrition Therapy* (12th ed.). Elsevier Science. Boston.
- Mangal, S.K. 2004. *Advanced Educational Psychology*. Prentice Hall. New Delhi.
- Mishra, G., and Dalal, A.K. (Eds.). 2001. *New Directions in Indian Psychology*: Vol. 1. Social Psychology. Sage. New Delhi.
- Mudambi, S.R., and Rajagopal, M.V. 2001. *Fundamentals of Foods and Nutrition*. New Age International Pvt. Ltd. New Delhi.
- Pandey, I.M. 2007. *Financial Management*. (9th ed.). Vikas Publishing House. New Delhi.
- Pankajam, G. 2001. *Extension Third Dimension of Education*. Gyan Publishing House New Delhi.
- Rao Raja, S.T. 2000. *Planning of Residential Buildings*. Standard Distributors. New Delhi.
- Saraswathi, T.S. 1999. *Culture, Socialisation and Human Development*. Sage. New Delhi.
- Sawhney, H. K., and Mital, M. 2007. *Family Finance and Consumer Studies*. Elite Publishing House. New Delhi.
- Sharma, D. 2003. *Childhood, Family and Socio-cultural Change in India: Reinterpreting the inner world*. OUP. New Delhi.
- Sharma, N. 2009. *Understanding Adolescence*. National Book Trust. New Delhi.
- Srivastava, A.K. 1998. *Child Development: An Indian Perspective*. NCERT. New Delhi.
- Sturm, M.M., and Grieser, E.H. 1962. *Guide to Modern Clothing*. Mc Graw Hill. New York.
- Vidyasagar, P.V. 1998. *Handbook of Textiles*. Mittal Pub. New Delhi.
- Wadhwa, A., and Sharma, S. 2003. *Nutrition in the Community*. Elite Pub. New Delhi.
- Yadava, J.S., and Mathur, P. 1998. *Issues in Mass Communication, the Basic Concepts*. Vol. 1. Kanishka Pub. New Delhi.

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