

**COURSE  
GUIDE**

**PHS 820  
INTRODUCTION TO STRESS AND COPING  
MEASURES IN PUBLIC HEALTH**

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## **INTRODUCTION**

**Welcome to PHS 820: Introduction to Stress and Coping Measures in Public Health.** This course is a two-credit unit course designed for Public Health Students.

This course guide gives you an overview of the course. It also provides you with information on the organisation and requirements of the course. In other words, it enables you to know what the course is all about, what you ought to know in each unit, what additional material one needs to use and how you can work your way through this course.

## COURSE AIM

The basic aim of PHS 820: Introduction to stress and coping measures in Public Health is to expose the learner to the stress and coping mechanisms. This broad aim will be consummated through the following topics:

- 1. Definitions of public health and stress**
- 2. Key issues in the definition of public health**
- 3. Understanding stress**
- 4. Types and effects of stress**
- 5. Classification and characteristics of stress**
- 6. Stages of stress**
- 7. Stress and the human immune system**
- 8. Stress and human memory**
- 9. Stress and emotional intelligence**
- 10. Individual differences in stress**
- 11. Cognitive Behavioural Therapy (CBT) as coping mechanism for stress**
- 12. Nutrition as coping strategy for stress**
- 13. Relaxation and exercises as coping strategy for stress**

## COURSE OBJECTIVES

In each of the units, we have specific objectives. It is advisable for you to go through these objectives before reading through the unit. In doing this, you are sure that you have covered the prerequisites of that unit. Also take note of the self-assessment exercises and the Tutor-Marked Assignment in each unit as these will help you test yourself-As you study.

To achieve the aims set out in *PHS820: Introduction to stress and coping measures in Public Health*, the objectives for the course as a whole would be emphasized. On successful completion of the course, you will be able to:

- 1. Define Public Health**
- 2. Explain key variables in the definition of public health**
- 3. List what Public Health Professionals do**
- 4. Explain why Public Health Professionals should study stress and its coping mechanism**
- 5. Discuss the nature of stress**
- 6. Define of stress**
- 7. List and explain types of stress**

- 8. Elaborate on the effect of stress on the body**
- 9. Discuss some important points relating to the nature of stress**
- 10. Discuss classification of stress**
- 11. Describe factors that triggers stress**
- 12. Explain stages of stress**
- 13. Describe the psychobiological basis of stress**
- 14. Describe the effect of stress on the immune system**
- 15. Explain stress and the immune system cells**
- 16. Illustrate the relationship between stress and illness**
- 17. Describe the relationship between stress and immune system**
- 18. Describe the relationship between stress and human memory**
- 19. List the gains of stress to human memory**
- 20. List the losses or disadvantage of stress to human memory**
- 21. Define emotional intelligence**
- 22. Explain the role of stress on emotional intelligence**
- 23. Describe categories of emotional intelligence**
- 24. Describe ways in which we use emotional intelligence to deal with stress**
- 25. Discuss the impact of stress on cognitive emotional abilities and emotional intelligence of workers.**
- 26. Discuss the issue of stress and work performance**
- 27. Discuss the relationship between nutrition and stress**
- 28. Discuss the role of Cognitive Behavioural Therapy (CBT) as coping strategy for stress**
- 29. Explain the benefit of Cognitive Behavioural Therapy (CBT) as coping strategy for Stress**
- 30. List and explain the types of Cognitive Behavioural Therapy (CBT)**
- 31. Recall steps in Cognitive Behavioural Therapy**
- 32. Explain the role of nutrition in stress management**
- 33. Discuss the importance of balanced diet in the management of stress**
- 34. Describe the function of several nutrients required in the maintenance of balanced diet and stress management**
- 35. Demonstrate how to achieve success in diet**
- 36. Describe the concept of relaxation technique**
- 37. Explain types of relaxation techniques**
- 38. Examine benefit of relaxation techniques**

**39. Discuss the concept of exercise as coping strategy for stress.**

## **WORKING THROUGH THE COURSE**

To complete the course, you are required to read the study units and related materials. Each unit contains Self-Assessment Exercises (SAEs) and Tutor-Marked Assignment (TMA). These exercises are to aid you in understanding the concepts of the course and it is advisable that you attempt each of them. At the end of the course, you will be required to write the final examination. Below are the components of the course and what you are expected to do.

## **COURSE MATERIALS**

Your course material contains the following:

- **Course Guide**
- **Study Units**
- **Assignment File**
- **Textbooks and References**
- Presentation Schedule**

## **STUDY UNITS**

There are Twelve (12) study units of Four (4) modules in this course. They are listed below:

### **Module 1 The Nature and Characteristics of Stress**

- Unit 1 Definitions of Public Health
- Unit 2 Nature of Stress
- Unit 3 Types and Effects of Stress

### **Module 2 Stress: Its Characteristics and Effects on Immunity and Memory**

- Unit 1 Classifications and Characteristics of Stress
- Unit 2 Stages of Stress
- Unit 3 Stress and Human Immune System

### **Module 3 Stress: Human Memory, Emotional Intelligence and Individual Differences**

- Unit 1 Stress and Human Memory

- Unit 2        Stress and Emotional Intelligence  
 Unit 3        Stress and Individual Differences

#### **Module 4    Stress and Coping Measures**

- Unit 1        Cognitive Behavioural Therapy (CBT) as Coping Strategy  
                   for Stress  
 Unit 2        Relaxation and exercise Technique as Coping Strategy for  
                   Stress  
 Unit 3        Nutrition as Coping Strategy for Stress

#### **TEXTBOOKS AND REFERENCES**

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## **ASSIGNMENT FILE**

In this file, you will find all the details of the work you must submit to your tutor for marking. The marks you obtain in these assignments will count towards the final marks you obtain for the course. The assignments must be submitted to your tutor for formal assessment in accordance with the deadline stated in the presentation schedule and the assignments file. You are required to do four Tutor-Marked Assignment, out of which the best three will be selected and recorded for you.

Assignments submitted to your tutor carry 30 per cent of your total score. The second one is the written examination. This will be discussed in details under Final Examination and Grading.

## **TUTOR-MARKED ASSIGNMENT (TMA)**

There are Twelve (12) tutor-marked assignment in this course. Every unit has a tutor-marked assignment. You will be assessed on four of them but the best three performances from the (TMA) will be used for your 30 per cent grading. The assignments for these units in the course are contained in the assignments file. When each assignment is completed, send it together with a TMA form to your tutor. Ensure that each assignment reaches your tutor on or before the deadline given in the assignment file. If, for any reason you cannot complete your work on time, contact your tutor before the Assignment is due to discuss the possibility of an extension. Extensions will not be granted after the due date unless there are exceptional circumstances warranting such.

## FINAL EXAMINATION AND GRADING

The final examination for in PHS 820: Introduction to stress and coping measures in Public Health will be of two hours duration and a value of 70% of the total course grade. All areas of the course may be examined. Find time to read the unit all over before your examination. The examination will consist of questions, which reflect the kind of the self-assessment exercises and TMA you have previously encountered. All areas of the course will be assessed.

## COURSE MARKING SCHEME

The following Table lays out how the actual course mark allocation is broken down.

**Table 1 Distribution of scores**

Assessments	Marks
Assignments (Three assignments).	30%
Final Examination	70%
<b>Total</b>	<b>100%</b>

## PRESENTATION SCHEDULE

The dates for submission of all assignments will be communicated to you. You will also be told the date of completing the study units and dates for examinations.

**Table 2 Course organisation**

Unit	Title of Work	Weeks Activity	Assignment
Course Guide <b>Module I</b>	<b>The Nature and Characteristics of Stress</b>	Week 1	
Unit 1	Definitions of Public Health and Stress	Week 1	Assignment 1
Unit 2	Nature of stress	Week 2	Assignment 2
Unit 3	Types and effects of stress	Week 3	Assignment 3
<b>Module 2</b>	<b>Stress, its characteristics and effects on immunity and memory</b>	Week 4	
Unit 1	Classifications and characteristics of stress	Week 4	Assignment 4
Unit 2	Stages of stress	Week 5	Assignment 5
Unit 3	Stress and human immune system	Week 6	Assignment 6

<b>Module 3</b>	<b>Stress: Human memory, emotional intelligence and individual differences</b>	<b>Week 7</b>	
Unit 1	Stress and human memory	Week 7	Assignment 7
Unit 2	Stress and emotional intelligence	Week 8	Assignment 8
Unit 3	Stress and individual differences	Week 9	Assignment 9
<b>Module 4</b>	<b>Stress and coping measures</b>	<b>Week 10</b>	
Unit 1	Cognitive Behavioural Therapy (CBT) as coping measure for stress	Week 10	Assignment 10
Unit 2	Relaxation and exercise technique as coping strategy	Week 11	Assignment 11
Unit 3	Nutrition as Coping Strategy	Week 12	Assignment 12
	Revision		
	Examination		
	<b>Total</b>	<b>12 Weeks</b>	

## HOW TO GET THE MOST FROM THIS COURSE

In Distance Learning, the study units replace the university lecture. This is one of the great advantages of distance learning. You can read and work through the specially designed study materials at your own pace, and at a time and place that suit you best. Think of it as reading the lecture instead of listening to the lecturer. In the same way, a lecturer might give you some readings to do, the study units tell you when to read, and which are your text materials or reference books. You are provided with exercises to do at appropriate points, just as a lecturer might give you an in-class exercise.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit, and how a particular unit is integrated with other units and the course as a whole. Next to this, is a set of learning objectives. These objectives allow you to know what you should be able to do by the time you have completed the unit. The learning objectives are meant to guide your study. The moment a unit is finished, you must go back and check whether you have achieved the objectives. If this is made a habit, then you will significantly improve your chances of passing the course.

The main body of the unit guides you through the required reading from other sources. This will usually be either from the reference books or

from a Reading Section. The following is a practical strategy for working through the course. If you run into any trouble, telephone your tutor. Remember that your tutor's job is to help you when you need assistance, do not hesitate to call and ask your tutor to provide it.

- i. Read this course guide thoroughly, it is your first assignment.
- ii. Organise a study schedule. Design "Course Overview" to guide you through the course. Note the time you are expected to spend on each unit and how the assignments relate to the units. Whatever method you choose to adopt, you should decide on, and write in your own dates and schedule of work for each unit.
- iii. Once you have created your own study schedule, do everything to stay faithful to it. The major reason that students fail is that they get behind with their course work. If you get into difficulties with your schedule please, let your tutor know before it is too late to get help.
- iv. Turn to the unit, and read the introduction and objectives for the unit.
- v. Assemble the study materials. You will need your set books and the unit you are studying at any point in time.
- vi. Work through the unit. As you work through the unit, you will know other sources to consult for further information. Up-to-date course information will be continuously available there.
- vii. Well before the relevant due dates (about 4 weeks before due dates) access the assignments file on the NOUN website and download your next required assignment. Keep in mind that you will learn a lot by doing the assignments carefully. They have been designed to help you pass the examination. Submit all assignments not later than the due time.
- viii. Review the objectives for each study unit to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study materials or consult your tutor.

- ix. When you are confident that you have achieved a unit's objectives, you can start on the next unit. Proceed unit by unit through the course and try to pace your study so that you keep yourself on schedule.
- x. When you have submitted an assignment to your tutor for marking, do not wait for its return before starting on the next unit, keep to your schedule.
- xi. When the assignment is returned, pay particular attention to your tutor's comments, both on the Tutor-Marked Assignment form and also the written comments on the ordinary assignments.
- xii. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in the Course Guide).

## **TUTORS AND TUTORIALS**

You will be notified of the dates, times and location of these tutorials/facilitation, together with the name and phone number of your tutor. Your tutor will mark and comment on your assignments. Keep a close watch on your progress and on any difficulties you might encounter and provide assistance to you during the course. Do not hesitate to contact your tutor by telephone or e-mail for help. Contact your tutor if:

- i. You do not understand any part of the study units or the assigned readings.
- ii. You have difficulty with the exercises.
- iii. You have a question or problem with an assignment or with your tutorials comments on an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face-to-face contact with your tutor and ask questions which are answered instantly. You can raise any problem encountered in the course of your study.

To gain the maximum benefit from course tutorials, prepare a questions list before attending them. You will learn a lot from participating in discussion actively.

## **SUMMARY**

This course guide gives you an overview of what to expect in this course. The course teaches you the basic principles underlying stress and coping mechanisms. It also establishes the physical, biological, psychological social and aspects of stress as well as its coping mechanisms. We wish you success with the course and hope that you will find it both interesting and useful.

**MAIN  
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## **MODULE 1 THE NATURE AND CHARACTERISTICS OF STRESS**

Unit 1	Definitions of Public Health
Unit 2	The Nature of Stress
Unit 3	Types and Effects of Stress

### **UNIT I DEFINITIONS OF PUBLIC HEALTH**

#### **CONTENTS**

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3.4	Why should Public Health Professionals Study Stress and its Coping Mechanisms?
4.0	Conclusion
5.0	Summary
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#### **1.0 INTRODUCTION**

We welcome you all to this course titled: PHS 820 – Introduction to stress and coping measures in Public Health. We hope you have taken time to go through the course guide presented at the beginning of this course. Before we learn about the nature of stress, let us start by defining what Public Health means. We are almost certain that you have significant knowledge in this area, but as teachers, we cannot assume. It will therefore be exciting to refresh our memory in this area. Enjoy your studies

#### **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- define public health
- explain key terms in the definition of public health



- discuss the concepts of health promotion, prevention and rehabilitation
- list what Public Health Professionals do
- explain why Public Health Professionals should study stress and its coping mechanism.

### **3.0 MAIN CONTENT**

#### **3.1 Definition of Public Health**

The University of Pittsburg Graduate School of Public Health (2020) presented us with a simple definition of Public Health. This was defined as the “science of protecting the safety and improving the health of communities through education, policy making and research for disease and injury prevention”. They pointed out that definition of public health is different for every person. Whether you like to conduct laboratory or field research, formulate policy, or work directly with people to help improve their health, there is a place for you in the field of public health. Being a public health professional enables you to work around the world, address health problems of communities as a whole, and influence policies that affect the health of societies (UPGSPH, 2020).

Further, public health, as defined in Gidey, Taju and Hagos (2005) is viewed as the science and art of preventing diseases, prolonging life, promoting health and efficiencies through organised community effort. It is also concerned with the health of the whole population and the prevention of diseases. It is also regarded as one of the efforts organised by society to protect, promote, and restore the peoples’ health. It is the combination of sciences, skills and beliefs that is directed to the maintenance and improvement of the health of all the people through collective social actions.

#### **SELF-ASSESSMENT EXERCISE**

What do you understand by Public Health?

#### **3.2 Key Terms in the Definition of Public Health**

We hope you have attempted the question posed above. Now, let us identify the key terms associated with the definition of public health. They are health promotion, prevention and rehabilitation. Below are further explanation on these key terms.

### **3.2.1 Health Promotion**

Health promotion is a guiding concept involving activities intended to enhance individual and community well-being. It seeks to increase involvement and control of the individual and the community in their own health. It acts to improve health and social welfare, and to reduce specific determinants of diseases and risk factors that adversely affect the health, well-being, and productive capacities of an individual or society, setting targets based on the size of the problem but also the feasibility of successful interventions, in a cost-effective way. Health promotion is a key element in public health and is applicable in the community, clinics or hospitals, and in all other service settings. (Gidey, Taju & Hagos, 2005).

#### **SELF-ASSESSMENT EXERCISE**

List ten (10) goals of health promotion.

#### **3.2.1.1 Elements of Health Promotion**

The elements of health promotion are:

- Addressing the population as a whole in health related issues;
- Directing action to risk factors or causes of illness or death;
- Undertaking activities approach to seek out and remedy risk factors in the community that adversely affect health;
- Promoting factors that contribute to a better condition of health of the population;
- Initiating actions against health hazards, including communication, education, legislation, fiscal measures, organizational change, community development, and spontaneous local activities;
- Involving public participation in defining problems, deciding on action;
- Advocating relevant environmental, health, and social policy;
- Encouraging health professionals' participation in health education and health policy, (Gidey, Taju & Hagos, 2005).

### **3.2.2 Prevention**

Prevention seeks to promote, preserve, and restore health when it is impaired, and minimise suffering and distress. There are three levels of prevention:

- *Primary Prevention* refers to those activities that are undertaken to prevent the disease and injury from occurring. It focuses on both the individual and the community. It may be directed at the host, to increase resistance to the agent (such as immunisation or cessation of smoking), or at the environmental, to reduce conditions favourable to the vector for a biological agent, such as mosquito vectors of malaria.
- *Secondary Prevention* is the early diagnosis and management to prevent complications from a disease. It includes steps to isolate cases and treat or immunise contacts to prevent further epidemic outbreaks.
- *Tertiary Prevention* involves activities directed at the host but also at the environment in order to promote rehabilitation, restoration, and maintenance of maximum function after the disease and its complications have stabilised. Providing a wheelchair, special toilet facilities, doors, ramps, and transportation services for paraplegics are often the most vital factors for rehabilitation (Gidey, Taju & Hagos, 2005).

### 3.2.3 Rehabilitation

Rehabilitation is the process of restoring a person's social identity by repossession of his/her normal roles and functions in society. It involves the restoration and maintenance of a patient's physical, psychological, social, emotional, and vocational abilities. Interventions are directed towards the consequences of disease and injury. The provision of high quality rehabilitation services in a community should include the following:

- Conducting a full assessment of people with disabilities and suitable support systems;
- Establishing a clear care plan;
- Providing measures and services to deliver the care plan(Gidey, Taju & Hagos, 2005)

### SELF-ASSESSMENT EXERCISE

Discuss the terms associated with the definition of public health.

### 3.3 What do Public Health Professionals do?

You have familiarised yourself with the definitions and elements of Public Health. This is just a guide feel free to consult other literature in

this area in order to broaden your learning experience. We will now learn about what Public Health Professionals do.

To the question, what do Public Health Professionals do, UPGSPH (2020) noted that as a public health professional, you will be trained to perform one or more of these ten (10) essential services:

- i. Monitor the health status of a community to identify potential problems
- ii. Diagnose and investigate health problems and hazards in the community
- iii. Inform, educate, and empower people about health issues, particularly the underserved and those at risk
- iv. Mobilise community partnerships to identify and solve health problems
- v. Develop policies and plans that support individual and community health efforts
- vi. Enforce laws and regulations that protect health and ensure safety
- vii. Link people to needed personal health services and ensure the provision of health care when otherwise unavailable
- viii. Ensure a competent public health and personal health care workforce
- ix. Evaluate effectiveness, accessibility, and quality of personal and population-based health services
- x. Research new insights and innovative solutions to health problems

You have familiarized yourself with some duties expected of the public health Professionals. We will now provide insight on “why should public health professionals study stress and its coping mechanisms.

### **3.4 Why Should Public Health Professionals Study Stress and its Coping Mechanisms?**

Observations show that health care like most professional jobs is a stressful profession and takes its toll at physical, emotional, and mental levels. We know that to effectively care for other people you must take good care of yourself. Public health services involve taking care of other peoples' lives while mistakes or errors could be costly and sometimes irreversible. It is thus expected that the health professionals must be in a perfect state of mind devoid of morbid worries and anxieties, (Kakunje, 2011), in order to carry out their duties effectively.

This is however not usually the case because the health professionals apart from being affected by the same variables that impose stress on the general population, are also prone to stress because of the peculiarities of their work situation and the expectation of the society at large. They face

a lot of stressors like work over-load, excessive working hours, sleep deprivation, repeated exposure to emotionally charged situations, exposure to diseases, dealing with difficult patients, conflicts with other staffs. In addition, hostile job environment, administrative ineptitude and bureaucratic bottlenecks can make the job situation very frustrating. Inadequate infrastructure, unavailable and obsolete equipments make the long years and fortune spent in training unrewarding for many (Kakunje, 2011; Familoni, 2008).

Stress creates a personal cost to the individuals concerned, a financial cost to the organizations in terms of absence, early retirement and complaints, and a health cost to patients in terms of the risk of poorer quality care that is received by patients from stressed or dissatisfied staff. The ‘burnout phenomenon’, a terminology made popular by Felton consists of a triad of emotional exhaustion, depersonalisation (treating patients as if they were objects) and low productivity/achievements. This is particularly common in health professionals under stress (Kakunje, 2011; Familoni, 2008); and should be understood and managed.

#### **4.0 CONCLUSION**

In this unit, we defined Public Health as “science of protecting the safety and improving the health of communities through education, policy making and research for disease and injury prevention” Key terms associated with this definition include: health promotion, prevention and rehabilitation. To the question, what do public health professionals do, we noted that they are trained to amongst many, monitor the health status of a community to identify potential problems, diagnose and investigate health problems and hazards in the community, inform, educate, and empower people about health issues, particularly the underserved and those at risk, etc. We also tried to argue out the need for the understanding of stress and its coping mechanisms among Public Health professionals, noting that health care in general is a very stressful experience that could lead to ‘burnout syndrome’ with resultant health, social and physiological implications. This could result in poor management of individuals in need of care and empathy.

#### **5.0 SUMMARY**

We hope you enjoyed your studies. In this unit, we learnt the following: definition of public health, key terms associated with the definition of public health, what does Public Health Professionals do? Why should Public Health Professionals study stress and its coping mechanisms? Let us also note that the profession of public health involves the application of many different disciplines namely: Biology, Anthropology, Public

policy, Mathematics, Engineering, Education, Psychology, Computer science, Sociology, Medicine, Business and others.

## 6.0 TUTOR-MARKED ASSIGNMENT

Explain why Public Health Professionals should study stress and its coping mechanisms?

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## **UNIT 2 THE NATURE OF STRESS**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 The Nature of Stress: An Overview
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    - 3.3.1 Cannon “Fight-or-Flight” Response
    - 3.3.2 Selye and the General Adaptation Syndrome
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- 5.0 Summary
- 6.0 Tutor-Marked Assignment
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### **1.0 INTRODUCTION**

Welcome to Unit 2 of this course. We hope you found the first unit refreshing. Unit 1 provided us with overview of public health, specifically, the definition of public health, key terms associated with the definition of public health, what public health professionals are expected to achieve in the health sector and the need for public health professional to study and understand stress, its effects and coping measures. Finally, we noted that this profession entails application of many disciplines which include: Biology, Anthropology, Public policy, Mathematics, Engineering, Education, Psychology, Computer science, Sociology, Medicine, Business and others. In this unit, we shall be learning about stress, its definitions and early contributors to this concept. Also remember to attempt the self- assessment exercises to continually test understanding of the concept learnt in each unit.

### **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- discuss the nature of stress
- define stress
- illustrate early contribution to the concept of stress, with specific examples.



### **3.0 MAIN CONTENT**

#### **3.1 The Nature of Stress: An Overview**

We have been able to understand why Public Health Professionals should study stress and its coping mechanisms, let us now discuss the nature of stress.

Overtime, the discussion on stress has become so popular, this is partly because nobody is immune to stress. We can all get caught up in over-tightening life situations that cause or induces stress in the individuals. So, every living human being is a potential victim of stress. When stress is considered as something that occurs repeatedly across the lifespan, the true incidence of stress is much higher.

People usually use the term ‘stressed out’ to refer to negative experiences and it has in fact become a universal phenomenon. Nearly, one out of every five people report that they are experiencing high levels of negative stress (DeRaeve, Vasse, Jansen, Van den Brandt & Kant, 2007). The above background statements simply point to the fact that stress has become part and parcel of life in human societies. The frustrations, disappointments and pressures of daily life constitute the genesis of emotional stress.

Stress is a widespread phenomenon. All people have experienced it throughout their history and throughout human history. Stress is one the special characteristics of life and its presence have been much highlighted so that in fine arts and literature of all eras it has been addressed (DeRaeve, Vasse, Jansen, Van den Brandt & Kant, 2007).

Stress is therefore the prize one pays for living in a society, given the fact that our traditional mechanisms of handling the stresses and strains of living are fast breaking down as a result of rapid urban development, increasing corporate regimentation of work life, breakdown of cherished traditional values and social supports, increasing personal and group conflicts, including security threats to life and property and the challenge of adjustment to new technologies. The breakdown of our traditional modes of coping with life changes and the stress they induce simply allow the stress ‘virus’ to plague life in present day society.

In the process of living and the struggle to live, we become confronted with barges and streams of life demands and pressures on our time and attention. It is because we find it difficult to attend and respond to these demands and pressures that we run into frustrations, tensions and anxieties. These demands on our time and leisure and which call for our reactions and responses are labeled ‘stressors’. In ordinary language these

stressors are demanding life situations located in our homes, streets, places of work, community and in our interaction with people in the environment. The stressors can either be pleasant or unpleasant. For example, if we win a huge sum of money in a lottery draw or passed major and difficult examination, these news items become stressors because they challenge us to respond. As a bodily indication or reaction to the stressors, we experience changes not only in our external behaviours but also in our internal body reactions. Similarly, if we hear news of death of a dear one or loss of property, our body reactions and external behaviours follow nearly the same pattern of response. The stressors are therefore the stimuli that propel us to action and to which we respond in a nonspecific way. It is upon the understanding that human beings do not respond to life situations in nearly identical ways that stress has come to be identified as a non-specific response of the body to demands upon it.

Though different people may experience the same type of events, each of them will experience that event in a unique way, that is, some people are more vulnerable to becoming more stressed than others in any given situation. An event like getting stuck in traffic might cause one person to become very stressed out while it might not affect another person. Even good stressors such as getting married can impact individuals differently. Some people become highly anxious while others remain calm and composed at all time.

### **3.2 Definitions of Stress**

The overview of stress presented above must have given you an insight on stress and corresponding reactions to it. Let us now define stress from different perspectives.

Stress has been defined in the following ways by different authors:

- a. The nonspecific response of the body to any demand placed upon it to adapt, whether that demand produces pleasure or pain (Selye, 1956).
- b. Stress is defined by the American Psychological Association (APA, 2013) as a normal psycho physiological response to events which result in the sense of threat, sadness, dysphoria, and imbalance in people.
- c. McEwen (2007), described stress as a sense of being overwhelmed, worry, destruction, exhaustion, and lethargy which can result in both physical and psychological health.
- d. According to Behnoudi (2005), in medicine and biology, stress is any physical, psychological, and/or emotional factor which results in physical, and/or psychological tension.

- e. Kumari, Badrick, Chandola, Adam & Stafford (2009), defined stress as a situation in which individual is forced to act, and cannot bear the received mental tension.
- f. According to Falsetti, Monier, & Resnick (2005), stress is bodily response to any demand. Stress could be caused by either good or bad experiences.
- g. Silverman, Heim, Nater, Marques & Sternberg (2010), defined stress as any unpleasant emotional experience which is accompanied with predictable biochemical, physiological, and behavioural changes.
- h. Stress is a bodily reaction to a change which needs response, regulation, and/or physical, psychological, and or emotional adaptation. Stress could derive from any situation, condition, thought, and/or state; just need to cause frustration, anger, nervousness, and or anxiety (Sarafino, 2002).
- i. Stress is considered as a situation which is the result of interactions of individuals and their surrounding environments and causes disharmony between situational demands and bio psychosocial resources (Lazarus & Folkman, 1984).
- j. Stress is an exclusive relation between person and her/his surrounding or environment which she/he perceives as taxing, or is gone far beyond her/his coping resources and threatening her/his health (McEwen, 2004).
- k. Shahsavarani, Ashayeri, Lotfian, & Sattari, (2013), compared stress to allostasis. Allostasis is the process and capability of gaining stability in the moment of change. Whenever body stress systems are activated in response to high levels of stress, allostasis is evacuated and the body exposed to harm.

In general sense, stress could also be considered as a sign of active life, if not life becomes a passive journey of boredom. Without stress, the accompanying motivations and striving to accomplish life ambition and conquer the environment become illusive. Life may not be worth living at all. This positive picture painted about stress is known to have severe and deleterious effects on human performance, health and psychological well-being. Its negative consequences are easily appreciated in any analysis of human functional adaptation and quality of task performance under stress.

### **SELF-ASSESSMENT EXERCISE**

Define stress

### 3.3 Early Contribution to the Study of Stress

It is important to note that scientific interest in stress goes back nearly a century ago. One of the early pioneers in the study of stress was Walter Cannon, an eminent American physiologist at Harvard Medical School. Let us discuss his contribution in this area.

#### 3.3.1 Cannon “Fight-or-Flight” Response

Walter Cannon’s contribution to stress is known as the “fight-or-flight” response to stress. Let us create the scenario so you can fully appreciate what we are talking about.

Imagine that you are taking a walk on a peaceful but deserted road, and lost in thought, all of a sudden, there appears a relatively sizeable snake. The following happens to you...your norepinephrine (noradrenaline) from your adrenal glands springs up, your pupils begin to dilate. Your heart starts to pound and speeds up, you begin to breathe heavily and perspire, you get butterflies in your stomach, and your muscles become tense, preparing you to take some kind of direct action.....

Cannon proposed that this reaction, which he called the fight-or-flight response, occurs when a person experiences very strong emotions—especially those associated with a perceived threat. During the fight-or-flight response, the body is rapidly aroused by activation of both the sympathetic nervous system and the endocrine system. According to Cannon, the fight-or-flight response is a built-in mechanism that assists in maintaining homeostasis—an internal environment in which physiological variables such as blood pressure, respiration, digestion, and temperature are stabilised at levels optimal for survival. Thus, Cannon viewed the fight-or-flight response as adaptive because it enables us to adjust internally and externally to changes in our surroundings, which is helpful in species survival (Lumen Learning, 2021). The diagram below illustrates this physiological response to stress:

#### **Diagram: Flight or Flight response to stress**

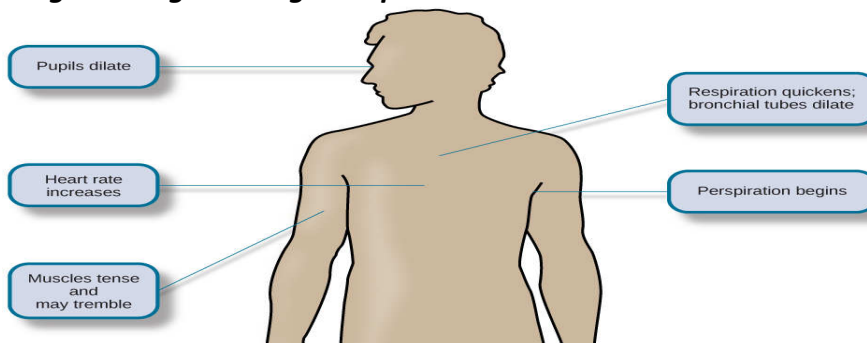


Image from <https://courses.lumenlearning.com/wsu-sandbox/chapter/what-is-stress/>

### 3.3.2 Selye and the General Adaptation Syndrome

Another important early contributor to the stress field was Hans Selye. He would eventually become one of the world's foremost experts in the study of stress. As a young assistant in the biochemistry department at McGill University in the 1930s, Selye was engaged in research involving sex hormones in rats. Although he was unable to find an answer for what he was initially researching, he incidentally discovered that when exposed to prolonged negative stimulation (stressors)—such as extreme cold, surgical injury, excessive muscular exercise, and shock—the rats showed signs of adrenal enlargement, thymus and lymph node shrinkage, and stomach ulceration. Selye realised that these responses were triggered by a coordinated series of physiological reactions that unfold over time during continued exposure to a stressor. These physiological reactions were nonspecific, which means that regardless of the type of stressor, the same pattern of reactions would occur. What Selye discovered was the general adaptation syndrome, the body's nonspecific physiological response to stress.

The general adaptation syndrome consists of three stages:

- (1) alarm reaction,
- (2) stage of resistance, and
- (3) stage of exhaustion (Selye, 1956).

**Alarm reaction** describes the body's immediate reaction upon facing a threatening situation or emergency, and it is roughly analogous to the fight-or-flight response described by Cannon. During an alarm reaction, you are alerted to a stressor, and your body alarms you with a cascade of physiological reactions that provide you with the energy to manage the situation. A person who wakes up in the middle of the night to discover her house is on fire, for example, is experiencing an alarm reaction (Lumen Learning, 2021).

If the exposure to stress is prolonged, the organism will enter the stage of **resistance**. During this stage, the initial shock of alarm reaction has worn off and the body has adapted to the stressor. Nevertheless, the body also remains alert and is prepared to respond as it did during the alarm reaction, though with less intensity.

If exposure to a stressor continues over a longer period of time, the stage of **exhaustion** ensues. At this stage, the person is no longer able to adapt to the stressor: the body's ability to resist becomes depleted as physical wear takes its toll on the body's tissues and organs. As a result, illness, disease, and other permanent damage to the body—even death—may occur.

In short, Selye's general adaptation syndrome suggests that stressors tax the body via a three-phase process—an initial jolt, subsequent readjustment, and a later depletion of all physical resources—that ultimately lays the groundwork for serious health problems and even death. It should be pointed out, however, that this model is a response-based conceptualisation of stress, focusing exclusively on the body's physical responses while largely ignoring psychological factors such as appraisal and interpretation of threats. Nevertheless, Selye's model has had an enormous impact on the field of stress because it offers a general explanation for how stress can lead to physical damage and, thus, disease. (Lumen Learning, 2021). The diagram below illustrates Selye's examples:

**Diagram: Stages of General Adaptation Syndrome**

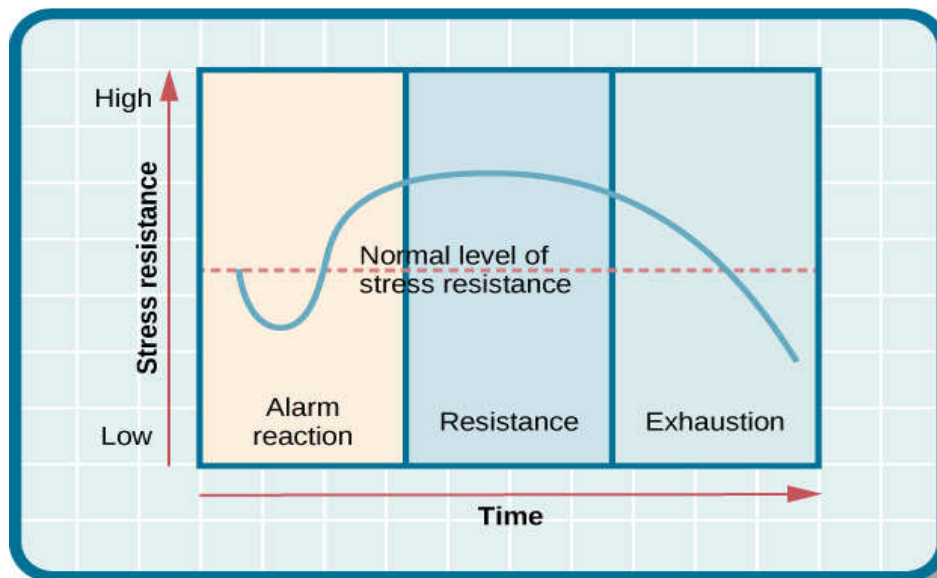


Image from <https://courses.lumenlearning.com/wsu-sandbox/chapter/what-is-stress/>

#### 4.0 CONCLUSION

We hope you enjoyed working through this unit. Here we presented an overview of stress, drawing insight on the fact that life itself is stressful. However, when the stressors and other stressful situations are prolonged and not well managed, this could lead to complications and poor wellbeing. We further presented comprehensive definition of stress, from diverse perspectives. We encourage you to study each definition to identify its similarities and differences. Further, we presented early contributions to the study of stress, illustrating the views of Cannon and Selye.

## 5.0 SUMMARY

We hope you enjoyed your studies. In this unit, we learnt the following: the nature of stress, definition of stress and the early contributions to the study of stress, specifically, Cannon's fight or flight response and Selye's general adaptation syndrome.

## 6.0 TUTOR-MARKED ASSIGNMENT

Explain with relevant examples the following insight to our understanding of stress:

Fight-or-flight response to stress

General adaptation syndrome

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**UNIT 3            TYPES AND EFFECTS OF STRESS****CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Types of Stress
  - 3.2 Effects of Stress on the Body
  - 3.3 Some Important Points Relating to the Nature of Stress
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

**1.0 INTRODUCTION**

Welcome to Unit 3 of this module. You may recall that in Unit 2, we learnt about the nature of stress, definition of stress and the early contributions to the study of stress, specifically, Cannon's fight or flight response and Selye's general adaptation syndrome. In this unit, we shall be learning about types of stress, effects of stress and some important points relating to the nature of stress. Enjoy your study.

**2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- list and explain types of stress
- elaborate on the effect of stress on the body
- discuss some important points relating to the nature of stress.

**3.0 MAIN CONTENT****3.1 Types of Stress**

Let us learn about types of stress. Three types of stress exist in literature and they are:

- **Eustress:** Eustress refers to healthy, good stress and developmental stress response, like falling in love. This is the type of stress that may propel employees to discover new and better ways of going about their duties. It denotes the presence of optimum level of stress in an individual. Under optimum level of stress employees are more likely to perform to their full capacity. But when the

stress experienced is below the optimum level, individuals are likely to get bored, the motivational level drops and apathy sets in. When people continuously operate in very low stress environment and constantly experiences boredom, they may withdraw from work psychologically (frequent mistakes, forgetfulness and absentmindedness) or physically (physical withdrawal and increased rate of tardiness).

- **Neustress:** This is a neutral type of stress. It has no consequential effect; it is neither considered good nor bad. Example of this kind of stress could be news of an earthquake in a faraway country. Although the events themselves are stressful, its impact on an individual removed from the area tends to be neutral.
- **Distress:** This type of stress is generally known as “stress”. It is the unhealthy and negative stress response. It denotes the presence of high level of stress in an individual which affects his/her performance and efficiency adversely. Distress can be further divided into acute stress and chronic stress.

We also need to note that acute stress appears and disappears over a short period of time and can be intense, while chronic stress may not appear to be intense but lingers for a much longer period of time. Distress causes people to make bad decisions. Distressed individuals are likely to develop psychological problems like insomnia, stomach problems and other psychosomatic problems.

### **SELF-ASSESSMENT EXERCISE**

Discuss the types of stress.

### **3.2 Effects of Stress on the Body**

Stress can be considered as our body’s physical, mental and chemical reactions to circumstances that frighten, confuse, endanger or irritate us. From medical point of view, stress can be described as the general response of the body to the general environmental stimuli. For instance, when handled right, stress becomes a friend that strengthens us for the next encounter. And when badly handled, it becomes an enemy, which can cause diseases like high blood pressure, ulcer, asthma and overactive thyroid. Effects of poorly handled stress to the system include:

- i. Physiological discomfort.
- ii. Emotional unhappiness.
- iii. Strained relationships with other people.

**Physiological discomfort:** Stress causes a number of physiological discomfort among which are migraine, headache, tension-type headache, musculoskeletal disorders, which result from muscle contraction during stress and muscle relaxation after stress (Sallis, 2013); Difficulties in respiration is another physiological discomfort that could result from stress. Acute stress such as, death of beloved keens, can end in an asthma attack in which airways between nose and lungs are obstructed. Moreover, stress can increase frequency and speed of breathing (hyperpnoea) which leads to panic attack in individuals that are predisposed (Maton, Hopkins, Johnson, McLaughlin, Warner, LaHart, 2010)

Chronic stress can lead to constant and continuous increase in heart rate and high levels of stress hormones as well as blood pressure, can deliver many problems to body. Such prolonged stress exposure can end in blood hypertension, heart attack, heart stroke, or brain stroke (McGill, McMahan & Gidding, 2008). Again, the liver produces extra blood sugar to boost energy during stress. If the individual is under chronic stress, the body may not be able to keep up with this extra glucose surge. This can result in higher risk of type 2 diabetes. (Schellenberg, Dryden, Vandermeer, Ha, & Korownyk, 2013).

Stress can also lead to increase in the stomach acidity and upset the digestive system, thereby causing heartburn and upsetting the digestive system. This can lead to increased risk of stomach ulcer. Reproductive system and sexuality can be affected in both sexes. In females, stress can disrupt the menstrual circle leading to irregular flow, heavier or even painful menstruation. It can also magnify the physical symptoms of menopause. In men, it can cause a significant drop in the level of testosterone; this can lead to erectile dysfunction and drop in sperm production. Chronic stress can trigger prostate infections in males (Maton et. al., 2013).

Above are some of the physiological discomfort that could result from poorly handled stress.

**Emotional unhappiness:** Stress can also lead to different emotions like, fear, anger, sadness, or frustration. These feelings can produce physical symptoms like depression and aggression. These can impact negatively on the general wellbeing of individuals. In response to stress, people could be withdrawn, indecisive, or inflexible. Emotional unhappiness could also lead to insomnia, or sleeplessness, irritability, change in sexual habits. Stress can lead people to consume more drugs and alcohol in the bid to deal with their unhappy emotions. This is a very dangerous approach and if not well checked, could result in serious drug problems. (McGill, McMahan & Gidding, 2008).

**Strained relationship with other people:** Stress affects relationships in many ways, first it causes individuals to be withdrawn in relationships and this can make the other partner to act in a negative or unconstructive way. This can result in using unkind and abusive words. This may be very upsetting and confusing because they may not even place their finger on what is causing problems in their relationships. When people are under stress, they are exhausted and this affects their libido and makes intimacy impossible. Stress causes irritability in relationships. Stress and its related hormones block our ability to pay attention to our partner or even study them. This makes couples forget how to express and receive love, leaving couples disconnected. Generally, stress causes serious strain in relationships especially when couples bring stress from workplace home. It can even lead to couples sleeping in different rooms or divorce or separation as the case may be (Lazarus & Folkman, 1984).

### **SELF-ASSESSMENT EXERCISE**

With relevant examples, explain the effects of stress.

### **3.3 Some Important Points Relating to the Nature of Stress**

**Stress is a Neutral word:** Stress is not bad in itself. But when stress is created by undesirable outcomes, it becomes Distress. On the other hand, if it is created by desirable and successful effects it is called Eustress. Eustress is a healthy, positive and developmental stress response. It is primarily the Distress form of stress which requires examination and steps to cope with it; because distress is generally associated with heart disease, alcoholism, drug abuse, marital problems, absenteeism etc.

**Stress is associated with Constraints and Demands:** Constraints prevent an individual from doing what he or she desires. If a person wants to buy something, but he does not have the necessary cash, it is a constraint. Demands refer to the loss of something desired. If a person wants to go and watch a movie, but he is unable to do so because of pressing official work, it amounts to a demand. Both Constraints and Demands can lead to potential stress.

**Certain conditions are necessary for potential stress to become actual stress:** For potential stress to become actual stress, two basic conditions must be present, first is 'Uncertainty over the outcome', and second is 'Outcome must be important'. Stress is usually very high when there is uncertainty over the outcome and the outcome is very significant. Both these conditions are necessary. If there is no uncertainty but the outcome is significant, there will not be any stress. On the other hand, if there is uncertainty, but the outcome is not significant, there will again be no stress.

**Stress is not simply Anxiety:** Stress may be accompanied by anxiety, but the two are not synonymous. Anxiety is psychological and emotional whereas stress operates in the physiological sphere also along with psychological sphere.

**Stress should also be differentiated from Nervous tension:** Nervous tension may be a result of stress. Stress is a subconscious action. Even unconscious people have exhibited stress, whereas nervous tension is a conscious action. People may “bottle up” their emotions and not reveal them through nervous tension.

**The term “Burnout” is also closely associated with stress:** Some researchers contend that burnout is a type of stress, but others treat it differently. Burnout is closely associated with helping professions like nursing, education and social work, it is characterised by emotional exhaustion, depersonalisation and diminished personal accomplishments. Even though technically, burnout is different from stress, these are generally used interchangeably.

#### 4.0 CONCLUSION

Our studies in this unit have shown that most people use the word stress to refer to negative experiences that leave us feeling overwhelmed. Thinking about stress exclusively as something negative gives us a false impression of its true nature, however, stress is a reaction to a changing demanding environment. In the actual sense, when properly considered, stress is much more about our capacity to handle change. It is about whether that change makes us feel good or bad. Change happens all the time and stress are what we feel when we are reacting to it. It involves ‘the set’ of emotional, cognitive reaction to change. Thinking about stress as a reaction to change suggests that it is not necessarily bad, and sometimes could even be a good thing. Some life changes such as getting a new job, moving in with a new partner or studying to master a new skill are genetically considered positive and life enhancing events even though they can also be quite stressful.

#### 5.0 SUMMARY

In this unit we learnt the following: types of stress, effects of stress and some important points relating to the nature of stress. We hope you found this unit interesting. Let us attempt the assessment below

#### 6.0 TUTOR-MARKED ASSIGNMENT

Explain the effects of stress on the body

## 7.0 REFERENCES/FURTHER READING

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## **MODULE 2      STRESS: ITS CHARACTERISTICS AND EFFECTS ON IMMUNITY AND MEMORY**

Unit 1	Classifications and characteristics of Stress
Unit 2	Stages of Stress
Unit 3	Stress and Human Immune System

### **UNIT 1      CLASSIFICATIONS AND CHARACTERISTICS OF STRESS**

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#### **1.0      INTRODUCTION**

Welcome to Module 2, Unit 1. Recall that in the last unit of Module 1, which is Unit 3, we learnt different types, effects of stress on the body as well as other important points relating to the nature of stress. In this unit, we will learn the classifications and characteristics of stress. Enjoy your studies.

#### **2.0      OBJECTIVES**

By the end of this unit, you should be able to:

- discuss classification of stress
- describe factors that triggers stress.

### **3.0 MAIN CONTENT**

#### **3.1 Classifications of Stress**

Stress is a feeling that people have when they are struggling to cope with challenges related to finances, work, relationships, environment, and other situations. It is the body's natural defense against real or imagined danger. It flushes the body with hormones to prepare systems to evade or confront danger. This is known as the "Fight-or-flight or Freeze response" The American Psychological Association, (2013) further classified stress into three different types namely:

- i. Acute stress
- ii. Episodic acute stress
- iii. Chronic stress.

Each of these 3 types of stress has their own characteristics, symptoms and duration. Each of the 3 different types of stress can present as single, repeated, complicated, or chronic. Therefore, they require different levels of interventions, management, and psychological treatment modalities due to the nature of the person's environment, lifestyle, developmental history, coping resources, and personality. Let us explain each of the classifications:

##### **3.1.1 Acute Stress**

Acute stress is the most common and frequent type of stress. It is usually very brief. Often times, acute stress is caused by reactive thinking. Negative thoughts predominate about situations or events that have recently occurred, or upcoming situations, events, or demands in the near future are predominant. For example, if you have recently been involved in an argument, you may have acute stress related to negative thoughts that are repetitive about the argument. Or you may have acute stress that is about an upcoming work deadline, etc. However, for most often when the thinking inducing stress is reduced or removed, the stress usually subsides. Acute stress causes signs and symptoms in the body, brain and emotions, but they do not cause serious damage like other types of stress (APA, 2013).

#### **SELF-ASSESSMENT EXERCICE**

Think of any experience or event that has triggered symptoms of acute stress on you in the past. Ponder on how you felt and how you were able to navigate around it



### 3.1.1.1 Signs and Symptoms of Acute stress

We hope you found the self-assessment exercise interesting. Let us learn about signs and symptoms of acute stress. They include the following:

- i. *Transient Emotional Distress*; for example, anger, irritability, anxiety or even depression.
- ii. *Transient Muscular distress*; e.g., Tension, headache, back pain, neck pain, jaw pain, and other muscular tensions that lead to pulled muscles and tendons and ligament problems.
- iii. *Transient stomach, gut and bowel problems*; e.g., heartburn, acid stomach, flatulence, diarrhea, constipation.
- iv. *Transient hyper arousal*; e.g. elevated blood pressure, rapid heartbeat, rapid pulse, sweaty palms, heart palpitations, dizziness, migraine headaches, cold hands or feet, shortness of breath, sleep problems, and chest pain (APA, 2013).

### 3.1.2 Episodic Acute Stress

This type of stress occurs when people experience recurrent acute stress, or when people's lives are frequently stressed. The individuals who frequently suffer acute stress often live a life of chaos and crisis. This kind of stress is usually characterised by life full of rush, pressure, people taking on more responsibilities than they can easily handle. These individuals are perpetually in the grips of acute stress overload.

Episodic Acute stress is very common among people with:

- i. *'Type A personality'*, because persons with 'Type A personality' have a competitive drive, they are aggressive, impatient, abrupt, and they have a sense of time urgency. In addition, 'Type A' personality presents as reactive with hostility, and almost always, a deep-seated insecurity about performance. These personality traits create frequent episodes of acute stress for the 'Type A' individuals.
- ii. The *"Worrier"*: This group of people presents with almost incessant negative thoughts causing episodic acute stress on physical and mental health. "Worriers" project probable disaster and negatively forecast catastrophe in almost every situation. They have core beliefs that the world is a dangerous, unrewarding, punitive place where something bad is always about to happen. These negative binge thinkers also tend to be over aroused and tensed, but are more anxious and depressed than angry and hostile. Their thoughts are frequently filled with "What if..." statements that are with projected negative outcomes. The most common

signs and symptoms are similar to acute stress, but due to the extended frequent over arousal or extended hyper arousal there is ongoing damage and suffering (APA, 2013).

### **Signs of Episodic Acute stress**

- i. Emotional distress: anger or irritability, anxiety and depression, short-tempered, impatient, tense.
- ii. Cognitive distress: compromised attention/concentration, compromised processing speed, compromised new learning and new learning memory consolidation and retrieval, and mental fatigue.
- iii. Interpersonal relationships deteriorate: The workplace becomes a very stressful place for them.
- iv. Muscular distress: Tension, headache, back pain, jaw pain, pulled muscles, tendons, and ligament problems.
- v. Stomach, gut, bowel problems, heartburn, acid stomach, flatulence, diarrhea, constipation, irritable bowel syndrome (IBS).
- vi. High blood pressure, rapid heartbeat, sweaty palms, heart palpitations, dizziness, migraine headaches, cold hands or feet, shortness of breath, insomnia, chest pain, and heart diseases.
- vii. Immune System Compromise: frequent colds/flu, allergies, asthma, and other immune system compromise illnesses (APA, 2013)

### **SELF-ASSESSMENT EXERCISE**

List the signs and symptoms of acute stress

#### **3.1.3 Chronic stress**

This is the most harmful type of stress. Chronic stress is the response to emotional pressure suffered for period of time in which an individual perceives they have little control. Chronic stress can cause an irreversible damage on one's physical health and deteriorate one's mental health if left untreated over a long period of time. Chronic stress is a grinding stress. It wears people away day after day, year after year. Chronic stress destroys lives, bodies, and minds. It wreaks havoc through long-term attrition (APA, 2013).

##### **3.1.3.1 Factors that could Trigger Chronic Stress**

- i. Long term poverty,
- ii. Repeated abuse in any form
- iii. Unemployment
- iv. Dysfunctional family

- v. Poor work environment
- vi. Substance abuse
- vii. Or an unhappy marriage.
- viii. Feeling of hopeless.
- ix. Aversive experience in childhood or traumatic experiences later in life.
- x. Ethnic rivalry / war
- xi. Insurgency and terrorism

Living with chronic stress causes an individual's lives, behaviours and emotional reactions to be ingrained thereby making them constantly prone to the hazardous stress effects on the body, mind and cognition regardless of the scenarios. Chronic stress can result to extreme physical and mental breakdown which can result in Violence, Homicide, Psychosis, Heart attack, Stroke, Suicidal thoughts and even, actual suicide. (APA, 2013)

#### **4.0 CONCLUSION**

It suffices to note that life changes such as losing a job or an important relationship could be negative and also stressful. Our experience of stress varies in intensity between high and low. When we have much to do, we tend to feel more stressed out. In this unit, we further provided insight on the concept of stress, specifically looking at signs and symptoms of acute, episodic and chronic stress.

#### **5.0 SUMMARY**

We hope you had an interesting study. In this unit, we learnt about different classifications of stress that include acute stress, episodic stress and chronic stress. We also identified their symptoms as well circumstances or events that sustains these stress reactions.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

List signs and symptoms of acute, episodic and chronic stress.

#### **7.0 REFERENCES/FURTHER READING**

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## UNIT 2 STAGES OF STRESS

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    - 3.2.3 Trans-cognitive Process
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### 1.0 INTRODUCTION

Welcome to Unit 2. In this unit, we shall be learning about stages of stress. This has been discussed in previous unit, in this Unit, we shall provide in-depth elaboration in this area. We will also learn about approaches to the study of stress. Enjoy your studies.

### 2.0 OBJECTIVES

By the end of this unit, you should be able to

- explain stages of stress
- discuss approaches to the study of stress.

### 3.0 MAIN CONTENT

#### 3.1 Stages of Stress

In as much as stress is what we know, feel hard to suppress, deal with, try to overcome and generally do our best to avoid; the truth is that stress is a huge part of success story of most successful people. In a sense, stress is a double-edged sword, most of the time it motivates us to take swift actions. Other times, it is the boulder that makes us feel helpless, causing all movement to stop abruptly. Let us learn about stages of stress:

### **3.1.1 Stage One: The Fight or Flight Stage**

The first stage of stress is usually ushered in with increase in the activities in the thyroid gland and adrenal glands. When this happens, our body usually alerts us that we are stressed because the adrenal glands go into overload but humans usually ignore the signs / alert and still go about their duties. Further negligence of these early signs causes increase in stress hormones, heart rate, blood pressure, and even a decrease in short-term memory and feelings of stress, fear, anxiety and depression. A good thing about this alarm stage is that our mental focus increase in the short term and people can use the opportunity to solve immediate problems and return back to normal. So, it is advised that people should use this to their advantage, but always remember to bring it back (Selye, 1974).

#### **SELF-ASSESSMENT EXERCISE**

List one advantage of the alarm stage

### **3.1.2 Stage Two – Damage Control**

When we get signals of being stressed the cortisol (anti-inflammatory hormones) are secreted in order to control the inflammation. This goes a long way to keep things in check even though it is not a long term solution. It serves to keep activities on. Workers however ignore these signs and capitalize on the control hormones.

What happens, then, is that it does its best to keep things as normal as possible while the body works overtime. Anti-inflammatory hormones (cortisol) are secreted in order to control the inflammation that is happening. But this is not a long-term solution. It is a quick fix to keep things moving while issues are sorted out. Again, individuals capitalize on this control hormones, ignore the alarms and keep working. But this is not a very good approach and should be discouraged (Selye, 1974).

### **3.1.3 Stage Three – The Recovery Stage**

At this stage, according to Selye (1974), it must have dawned on individuals that they are really stressed, and they make efforts to slow down thereby recovering from the accumulated stress. In the process of recovery, our body tries to go back to our internal systems to resuscitate to their original and healthy levels. Recovery stage requires rest, sleep and drastic reduction in overall output. This is why one has to take break from work no matter how tight their schedules are.

### **3.1.4 Stage Four – Adaptation Stage**

If one did not listen to the earlier stages of stress mentioned above, and create time to recover, adaption sets in. The body adapts to stress by settling into the feeling of constant stress. This is very bad. At this stage, most individuals may find it increasingly difficult to manage their emotions, sleeping becomes a problem, self-esteem is affected and weight gain or loss may result (Selye, 1974).

### **3.1.5 Stage Five: The ‘Burn Out Stage’**

The fifth stage is the burn out stage. According to Selye, (1974), when the first four stages are ignored, the individual becomes completely ‘burn out’. Burn out could lead to full-fledged depression or other forms of psychological or physical breakdown.

### **SELF-ASSESSMENT EXERCISE**

Write short notes on the stages of stress

## **3.2 Approaches to the Study of Stress**

We have different approaches to the study of stress and they are explained below:

### **3.2.1 Response-Based Approach**

In response-based perspective, stress is based on the response of living being to the environmental demands. This perspective distinguishes between the stimulus (stressor) and the response (stress). Hans Selye is a popular representative of this approach. This stress response follows a typical three stage pattern which is similar both in animals and humankind. Selye (1974), named this pattern as General Adaptation Syndrome (GAS) which comprises:

- i. Alarm reaction (fight or flight response),
- ii. Resistance stage (bearing chronic stress and active use of body resources),
- iii. Exhaustion stage (onset of tissue damages, onset of disease, and evacuation of body resources).

### **3.2.2 Stimulus- based Approach**

This approach is derived from the studies of Holmes & Rahe, (1967). These authors believe that stress operates according to the amount and severity of the stressors and evaluate their power to deplete individuals. It

has been revealed that the average amount of effort needed to overcome some event might be a suitable index of its severity. One of the fundamental deficiencies of such perspectives is using weighted means of events which would result in neglecting individual differences among various people which will also lead to different perceptions of the same phenomenon.

### **3.2.3 Trans-cognitive Process**

Transactional-cognitive process perspective considers stress as a specific relation between individual and her/his surrounding environment in which individual perceives demands of the surrounding environment pressing and overwhelming on his/her resources and thereby, threatening his/her health. Cognitive-transactional based process perspective of stress has three meta-theoretical assumptions of transaction, process, and context, respectively. Therefore, stress occurs as a special intervening factor of the relation of individual and environment and both have mutual influence on each other. Stress is ever-changing, and special transaction derives from the context of the event. Authors of this perspective, consider stress as an active and progressive process which includes causal antecedents, intervening processes, and influences.

## **4.0 CONCLUSION**

We have come to realise that in as much as stress is what we know, feel try hard to suppress, deal with, try to overcome and generally do our best to avoid; the truth is that stress is a huge part of success story of most successful people. However, stress is a double-edged sword, it is motivating and debilitating. We have learnt this from the stages of stress discussed in this unit as well as approaches to the study of stress.

## **5.0 SUMMARY**

We hope you had an interesting study. In this unit, we learnt the five stages of stress namely: Stage one: the fight or flight stage; stage two – damage control; Stage three –recovery stage; Stage four – adaptation stage and Stage Five: the ‘Burn out stage’. We also learnt different approaches to the study of stress

## **6.0 TUTOR-MARKED ASSIGNMENT**

Explain the different approaches to the study of stress

## **7.0 REFERENCES/FURTHER READING**

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Holmes, T.H. & Rahe, R.H. (1967). The social adjustment rating scale. *Journal of Psychometric Research*. 11: 213-8.

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## **UNIT 3      STRESS AND HUMAN IMMUNE SYSTEM**

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  - 3.3 The Psychobiology Basis of Stress
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

### **1.0 INTRODUCTION**

Welcome to Unit 3. We hope you are enjoying your studies thus far. Always remember to take notes as you study and also consult other references as this habit will further enrich your studies. In this unit, while logically followings what we have been learning, we will be studying stress and the immune system. Please study attentively.

### **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- explain stress and the immune system cells
- illustrate the relationship between stress and illness
- describe the relationship between stress and immune system
- explain the psychobiology of stress.

### **3.0 MAIN CONTENT**

#### **3.1 Stress and Human Immune System**

Stress is a broad concept that comprises challenging or difficult circumstances (stressors) or the physiological or psychological response to such circumstances (stress responses). Stress can either be Acute (lasting for a very short period) or Chronic (lasting for days or even years). The immune system is a collection of billions of cells that travel through the blood stream. They move in and out of tissues and organs. They

defend the body against foreign bodies, such as bacteria, viruses and even cancerous cells. It is one of the systems that respond to challenging circumstances in humans and other species. The immune system comprises *cells, proteins, organs, and tissues* that work together to provide protection against bodily disease and damage. The immune cells have receptors for neurotransmitters and hormones such as norepinephrine, epinephrine, and cortisol, which mobilise and traffic immune cells, ideally preparing the body to mount an immune response if needed.

### 3.1.1 The Immune System Cells

The *white blood cells* are the main types of immune cells. They are divided into lymphocytes and phagocytes.

Two types of lymphocytes exist; they are:

- (a) The B-cells which produce antibodies that released into the fluid that surrounds the body's cells in order to destroy the invading virus and bacteria.
- (b) The T-cells which lock on invaded cells when an intruder is detected and multiply and destroys it.

During stress, the Lymphocytes which are an immunological cell change their responsiveness to signaling from the neurotransmitters and hormones. These immunological responses are biologically and energetically produced and overtime, chronic stress produces negative systematic changes both in immune trafficking and in target tissues (McEwen, 2012).

Several facets of the human immune system have been empirically associated with stress. For example, Segerstrom & Miller (2004) asserted that during acute stress, some cells are mobilized into the blood stream to prepare the body for injury or infection during "fight or flight". Acute stress also increases blood levels of pro-inflammatory cytokines.

Chronic stress like acute stress is associated with higher levels of pro-inflammatory cytokines, but with potentially different health consequences (Stephens, Hamer & Chida, 2007). Inflammation is a necessary short-term response for eliminating pathogens and initiating healing, but chronic, systemic inflammation represents dysregulation of the immune system and increases risk for chronic diseases, including atherosclerosis and frailty.

Another consequence of chronic stress is activation of latent viruses. Latent virus activation can reflect the loss of immunological control over

the virus, and frequent activation can cause wear-and-tear on the immune system. (Steptoe, Hamer & Chida, 2007).

Interestingly, these responses may not be the same for everyone. Those who have experienced early adversity, for example, may be more likely to exhibit exaggerated immune reactions to stress. When we are stressed, the ability the immune system to fight off antigens is reduced. That is why we are more susceptible to infections.

The stress hormone corticosteroid can suppress the effectiveness of the immune system (e.g. lowers the number of lymphocytes).

Stress can also have an indirect effect on the immune system as a person may use unhealthy behavioral coping strategies to reduce their stress, such as drinking and smoking. It is important to note that stress is linked to: headaches; infectious illness; cardiovascular disease; diabetes, asthma and gastric ulcers.

### **SELF-ASSESSMENT EXERCISE**

Write short note on stress and the immune system

#### **3.1.2 Stress and Illness**

We hope you are enjoying your studies. Have you taken time to answer the self-assessment exercise above, if yes, thumbs up to you! Let us continue with ascertaining the influence of stress on illness.

The manners in which humans respond to stress have an effect on digestive system. Digestion is inhibited during stress, and after stress digestive activity increases. This may affect the health of digestive system and cause ulcers. Adrenaline released during a stress response may also cause ulcers. Stress responses increase strain upon circulatory system due to increased heart rate. Stress can also affect the immune system by raising blood pressure thereby causing Hypertension which is a major risk factor in Coronary Heart Disease (CHD).

Stress also produces an increase in blood cholesterol levels, through the action of adrenaline and noradrenaline on the release of free fatty acids. This produces a clumping together of cholesterol particles, leading to clots in the blood and in the artery walls and occlusion of the arteries.

In turn, raised heart rate is related to a more rapid build-up of cholesterol on artery walls. High blood pressure results in small lesions on the artery walls, and cholesterol tends to get trapped in these lesions (Holmes, 1984). Stress can also have an indirect effect on illness as it is associated

with all manner of bad habits (coping strategies), for example smoking, drinking alcohol to excess, poor diet due to lack of time, lack of exercise for the same reason, lack of sleep etc. All of these are likely to have an adverse effect on a person's health so could cause some of the ill-effects attributed to stress per se.

## **SELF-ASSESSMENT EXERCISE**

Illustrate the linkage between stress and illness

### **3.1.3 Stress and the Functioning of Immune System**

Suffices to note that short-term suppression of the immune system is not dangerous, however, chronic suppression leaves the body vulnerable to infection and disease. Stress would just lead to frequent illness and infections. Stress responses increase strain upon circulatory system due to increased heart rate etc. This may increase a person's risk of developing disorders of the heart and circulation like the coronary heart disease (CHD). This is common with individuals with Type A personality. Stress responses have an effect on digestive system. During stress digestion is inhibited. After stress digestive activity increases and this may affect the health of digestive system and cause gastric ulcers.

## **3.2 The Psychobiological Basis of Stress**

We hope you have attempted the self-assessment exercise above. Now let us study the psychobiological bases of stress

Stress is a biological and psychological response experienced when we encounter a threat that we feel we do not have the resources to deal with. It results from any challenge or threat, either real or imagined, to normal body functioning. We need to note that stress response is the body's activation of physiological systems, namely the hypothalamic-pituitary-adrenal axis, to protect and restore to normal. Chronic activation of the stress response can lead to wear and tear that eventually can predispose an individual to disease.

The following are step-by-step insight into the psychobiological effects of stress:

- i. When the body perceives a stressful event, the *brain* and the *nervous* system are triggered, and swing into action.
- ii. *Sympathetic Nervous System* (SNS) is activated as primary response to stress and regulates many of physiological functions of the body, so that the individual can adapt to surrounding

- environment as much as possible (Schacter, Gilbert & Wegner, 2011).
- iii. In the process of stress response, the *hypothalamus* secretes various hormones, among which is *corticotropin releasing hormone* (CRH). This hormone is responsible for stimulating the pituitary gland and the initiation of the intensively-regulated pathway of stress response that produces short term responses to stress in form of:
    - iv. increased heart rate
    - v. dilation of the lungs which cause increased breathing decrease in digestive activity or loss of appetite; glucose is then released for energy.
    - vi. These short term responses are produced by the flight or fight Response through the *sympathetic medullary Pathway (SAM)* (Schacter, Gilbert & Wegner, 2011).
    - vii. The pituitary gland secretes hormones such as *Adrenocorticotrophic hormone (ACTH)* to the bloodstream, which balances the intensively-regulated response to stress.
    - viii. The *Amygdala* also have a role in the emotional processes and acts as a regulator of feelings, such as anxiety and fear, during the stress response (Roozendaal, McEwen, Chattarji, 2009)
    - ix. During stress the *Hippocampus*, one of the structures that make up the limbic system becomes very important, because cognitive processes like previous memories can have drastic impact on facilitation, inhibition, and even generating distinct response to stress. In addition, *hippocampus is a region in brain which is prone to damage and atrophy during exposure to stress* (Maras & Baram, 2012).
    - x. The *Prefrontal cortex activities* which consist of regulation of processes of planning, attention, and problem-solving are temporarily disrupted during stress response.
    - xi. *Locus coeruleus*, a region in pons, plays central role in producing norepinephrine neurotransmitter.
    - xii. *Norepinephrine* has the central role in the process of messaging in SNS (Sympathetic Nervous System) in the time of fight-or-flight response.
    - xiii. This region of brain receives inputs from Hypothalamus, Amygdala, and Raphe nucleus, and its neural extensions goes towards all parts of the brain and spinal cord (Phelps, 2004).
    - xiv. *Raphe nucleus* is a region in pons and has the central role of serotonin neurotransmitter.
    - xv. *Serotonin* regulates the mood, especially when stress is accompanied with depression and/or anxiety.
    - xvi. *Adrenal glands* are directly responsible for production of stress hormones which would be secreted in the time of stress response.

- xvii. The most important stress hormone is *cortisol* which is produced and secreted by adrenal glands (McEwen, 2012).
- xviii. In addition to locus coeruleus which secretes norepinephrine in central nervous system (CNS), adrenal glands can secrete noradrenaline (synonymous to norepinephrine in brain) in blood in the time of stress (Cahill, Gorski, & Le, 2003).
- xix. *Hypothalamus-pituitary-adrenal* (HPA) axis is a complex set of influences and feedback between three endocrine glands of hypothalamus, Pituitary, and Adrenal glands. Mutual interactions between these three glands shape HPA axis which form major part of the neuroendocrine system, control body reactions to stress, and regulates many bodily processes including digestion, autoimmune system, mood, sexual cycles, saving and consumption of energy. HPA axis is a multi-stage pathway in which information is transferred by chemical messengers from one point to another point of the body. Each stage, not only transfers the information to stimulate the next region, but also receives feedback from messengers which are produced in the next stages in order to reinforce its previous stages and/or weaken them.

Above is detailed presentation on the psychobiological bases of stress. We hope you took note of the italicised words as they would help you recall different organs and neurotransmitters involved in stress physiology.

#### **4.0 CONCLUSION**

We hope you enjoyed your studies. We have seen that stress continues to be an important area of study to all health practitioners and beyond. This equips us with insight on the causes and mechanisms of stress. Specifically in this unit, we learnt the correlation of stress to illness as well as immune system cells as well as an elaborate description of the physiology of stress

#### **5.0 SUMMARY**

In this unit, we presented an overview of stress and human immune system and specifically, stress and immune system cells, stress and illness, stress and the functioning of the immune system, the relationship between stress and immune system and the general physiology of stress.

#### **6.0 TUTOR-MARKED ASSIGNMENT**

Explain the physiology of stress

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## **MODULE 3            STRESS: HUMAN MEMORY, EMOTIONAL INTELLIGENCE    AND    INDIVIDUAL DIFFERENCES**

Unit 1	Stress and Human Memory
Unit 2	Stress and Emotional Intelligence
Unit 3	Stress and Individual Differences

### **UNIT 1            STRESS AND HUMAN MEMORY**

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3.1.1	Acute Stress and Human Memory
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3.1.3	Acute Stress and its Impact on Quality of Human Memory
3.2	Stress and Human Memory: Advantages
3.3	Stress and Human Memory: Disadvantages
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	Reference/Further reading

#### **1.0    INTRODUCTION**

Welcome to Module 3. In the previous module, we studied types, stages and characteristics of stress as well as its effects on the immune system. In this Unit, we shall be looking at stress and human memory. We will also determine the impact of stress in human memory. Enjoy your study.

#### **2.0    OBJECTIVES**

By the end of this unit, you should be able to:

- describe the relationship between stress and human memory
- list the gains of stress to human memory
- list the losses or disadvantage of stress to human memory.



### 3.0 MAIN CONTENT

#### 3.1 Stress and Human Memory

Stress can have contrasting effects on memory depending on the stage of memory in which it occurs.

Human memory has three stages;

- i. Encoding
- ii. Consolidation
- iii. Retrieval

*The encoding stage* deals with information processing and categorisation; In the *consolidation stage*, information is stabilized from short term into long term memory; and in *the retrieval stage*, the previously encoded and stored events or information are accessed. Therefore, effect of stress on the memory depends on the stage of the memory in which it occurs (Shields, Sazma, McCullough & Yonelinas, 2017).

##### 3.1.1 Acute Stress and Human Memory

Acute stress (short-lived stress from a specific situation) is known to play differential role in memory. It is important to note that acute stress sometimes benefits memory formation. Also, during acute stress, retrieval impairs memory. For example, if a dog attacks and tries to bite someone, within seconds, the autonomic nervous system will be activated. This system releases the stress hormone adrenalin that leads to symptoms of acute stress such as increased heart rate, blood pressure, and sweating while enhancing arousal and alertness (Quaedflieg & Schwabe, 2018). The adrenaline released also allows stress-associated brain areas such as the amygdala to exert influence directly on memory-associated brain areas such as the hippocampus. Acute stress reactions lead to the well-known fight-flight-or-freeze response, as this stress response could be used to deal with the dog attack in different ways: the person could run away; could fight the dog off, or could just freeze. The acute stress caused by the dog attack will also result in a second slower release of the stress hormone cortisol via activation of the hypothalamic-pituitary-adrenal axis in the brain.

#### SELF-ASSESSMENT EXERCISE

Explain the influence of acute stress on human memory.

##### 3.1.2 The Cortisol Hormone, Stress and Human Memory

The effect of cortisol on the brain ensues two phases:

- i. A rapid phase in which the effects start about 15-20 minutes after the stressor and continue for around one hour and;
- ii. A delayed phase in which the effects start 60-90 minutes after the stressor (Quaedflieg & Schwabe, 2018).

These *two cortisol phases* have different effects on different memory stages. The rapid autonomic nervous system and cortisol hormones induce a memory formation mode, which eases the creation of new memories. This mode facilitates the formation of stressor-related memories (i.e., during encoding) due to an increased excitability in brain structures related to memory (Joëls, Fernandez, & Roozendaal, 2011).

However, the shift towards this memory-formation mode in the brain during the rapid phase also causes reduced ability to retrieve stressor-unrelated information (Quaedflieg & Schwabe, 2018). Thus, when acute stress occurs during or prior to retrieval, memory will likely be impaired (Shields, Sazma, McCullough & Yonelinas, 2017).

Past research on memory retrieval also suggests that memory for negative information will be more impaired than memory for neutral information. On the other hand, the delayed cortisol hormones have the opposite effect: during this memory storage mode, the consolidation of stressor-related material is facilitated while formation of stressor-unrelated memories is impaired. Memory retrieval will continue to be impaired due to the delayed cortisol hormones (Shields, Sazma, McCullough & Yonelinas, 2017).

### **3.1.3 Acute Stress and its impact on Quality of Human Memory**

Acute stress can also have an impact on the quality of our memories. In a stressful situation, for example, we may shift from thinking in a flexible way to thinking in a more habitual way, for example, imagine you are not hungry, yet you get an urge to eat when you pass by the fridge. This habitual way of thinking is amplified by stress. Therefore, if you experience acute stress, you are more likely to open the fridge and eat when you pass by it. In contrast with the flexible thinking, this habitual way of thinking is more rigid and focuses less on relationships and complexities between stimuli or tasks. This shift is often adaptive in that it is less cognitively demanding than flexible thinking, and such a state can save mental resources and helps avoid hesitation in situations where fast action is required. (Schwabe & Wolf, 2013). Such habitual processing does not necessarily reduce learning performance, but may make it more difficult to apply such learning to novel stimuli or contexts

### **3.2 Stress and Human Memory: Advantages**

It is possible to find examples in real life of how stress can help memory formation. One example of how acute stress during encoding may benefit memory includes the situation of becoming an eyewitness to a crime. Neurobiology work theoretically suggests that experiencing a mild to moderate level of stress, and particularly emotional stress—as crimes often are—should improve eyewitness memory (Shields, Sazma, McCullough & Yonelinas, 2017).

The role one plays within a stressful situation could also contribute to how stressful the incident is and may matter for one's memory of the situation. Research also suggests that lower levels of stress can benefit memory at encoding stage (Schwabe, Joëls, Roozendaal, Wolf Oitzl, (2012). Another example of this benefit of acute stress is that of students studying for exams. Experiencing mild to moderate stress during this learning phase could help them perform better on subsequent tests. Overall, understanding the positive side of stress allows us to consider how to best use such information to benefit our memory.

### **3.3 Stress and Human Memory: Disadvantages**

We can use the same examples presented above to highlight the negative impact of stress on retrieval in everyday life. For example, after viewing a crime, eyewitnesses are often called into the police station to be interviewed about what they experienced. Some eyewitnesses may become stressed during such an interview, for instance, if they have experienced negative encounters with police in the past, have social anxiety, or are scared of the perpetrators about whom they are reporting. If eyewitness do experience stress, it is likely that their memory will be impaired. Similar impairments for stress retrieval have been found in children as well as adults. Another example is in school setting, where students are frequently faced with stressful situations where they need to retrieve memories, such as class presentations or exams. That means that heightened levels of stress during an assessment can negatively affect student's memory, and thus their performance and grades. Additionally, stress can impair one's ability to incorporate new information into what one already knows, a process that is often required for learning in academic settings. Teachers could also face negative impacts of stress in classroom settings. For example, if teachers experience acute stress, they may switch from a flexible to a habitual teaching style, which could hinder students' ability to effectively learn. Such examples demonstrate how acute stress before retrieval can impair memory skills in the real world, but we can try to overcome such impairments.

## **SELF-ASSESSMENT EXERCISE**

Explain the impact of acute stress on the quality of human memory

### **4.0 CONCLUSION**

The timing of the acute stressor plays a key role in its effect on memory and this timing is crucial to determine whether it helps or hurts our memory. In practice, this means that the same acute stress response that may be detrimental during retrieval can be beneficial during encoding. Therefore, stress cannot be classified solely as beneficial or harmful. Rather, it can have contrasting effects on our memories depending on the circumstances.

We hope you found this unit interesting. In identifying the relationship or effect of stress on human memory, we learnt that human memory consists of three stages, which are encoding, consolidation and retrieval. We went ahead to learn about the function of each stage as well as neurotransmitters that are activated during these stages.

### **5.0 SUMMARY**

In this unit, we were able to describe the relationship between stress and human memory as well as the advantages and disadvantages of stress to human memory. Let us attempt the assessment below.

### **6.0 TUTOR-MARKED ASSIGNMENT**

1. Discuss with examples the relationship between stress and human memory
2. What is the role Cortisol hormone on stress?

### **7.0 REFERENCES/FURTHER READING**

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**UNIT 2        STRESS AND EMOTIONAL INTELLIGENCE****CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 Definition of Emotional Intelligence
    - 3.1.1 Categories of Emotional Intelligence
    - 3.1.2 Ways we can use Emotional Intelligence to Deal with Stress
  - 3.2 Impact of Stress on Cognitive Emotional Abilities and Emotional Intelligence of Individuals
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 Reference/Further Reading

**1.0 INTRODUCTION**

Welcome to Unit 2: We will recall that in the previous unit, which is Unit 1, we studied the relationship between stress and human memory as well as the advantages and disadvantages of stress on human memory. In this unit, we will study the effect of stress on human emotional intelligence, specifically looking at categories of emotional intelligence, ways of using emotional intelligence to deal with stress and impact of stress on cognitive emotional abilities and emotional intelligence of individuals.

**2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- define emotional intelligence
- explain the role of stress on emotional intelligence
- describe categories of emotional intelligence
- describe we can use emotional intelligence to deal with stress
- discuss the impact of stress on cognitive emotional abilities and emotional intelligence of individuals.

**3.0 MAIN CONTENT****3.1 Definition of Emotional Intelligence**

Emotional intelligence (EI) is an umbrella term that captures how we perceive, regulate, use, and understand our own emotions and the

emotions of others. The term was first coined by psychologists Salovey and Mayer in 1990, and it refers to one's capacity to perceive, process and regulate emotional information accurately and effectively, both within oneself-And in others and to use this information to guide one's thinking and actions and to influence those of others (Salovey & Mayer 1990).

Emotional intelligence can lead us on the path to a fulfilled and happy life. Individuals with higher EI are better equipped to work cohesively within teams, deal with change more effectively, and manage stress – thus enabling them to more efficiently pursue general human objectives.

Emotional Intelligence can be conceptualised in terms of:

- i. *Trait Emotional Intelligence (TEI)*; TEI refers to a collection of emotional perceptions and dispositions assessed through self-report questionnaires.
- ii. *Ability Emotional Intelligence (AEI)*: This is concerned with emotion-related cognitive abilities, measured using maximum performance tests in a similar manner to intelligent quotient (IQ).

Because both TEI and AEI predict good health, successful relationships, educational attainment, and work-related success, among other positive life outcomes, higher levels are generally regarded as beneficial.

### **SELF-ASSESSMENT EXERCISE**

What do you understand by emotional intelligence?

#### **3.1.1 Categories of Emotional Intelligence**

The following are categories of emotional intelligence

- (a). *Self-awareness*: The ability to recognise and understand one's own emotions and their impact on others. Emotional self-awareness is also about recognising what motivates you and, in turn, what brings you fulfillment.
- (b). *Self-regulation*: The ability to manage one's negative or disruptive emotions, and to adapt to changes in circumstance. Those who are skilled in self-regulation excel in managing conflict, adapt well to change and are more likely to take responsibilities.
- (c). *Motivation*: The ability to self-motivate, with a focus on achieving internal or self-gratification as opposed to external praise or

reward. Individuals who are able to motivate themselves in this way have a tendency to be more committed and goal focused.

- (d) **Empathy:** The ability to recognise and understand how others are feeling and consider those feelings before responding in social situations. Empathy also allows an individual to understand the dynamics that influence relationships, both personal and in the workplace.
- (e) **Social skills:** The ability to manage the emotions of others through emotional understanding and using this to build rapport and connect with people through skills such as active listening, verbal and nonverbal communication (Salovey & Mayer ,1990).

### SELF-ASSESSMENT EXERCISE

As a health practitioner, ponder on how you can utilise the elements of emotional intelligence in the discharge of your duties and responsibilities

#### 3.1.2 Ways we can Use Emotional Intelligence to Deal with Stress

- (i) **Stress Buffer:** One mechanism through which EI may lead to positive effects is by acting as a “stress buffer” EI may minimise the (acute) stress experienced in demanding situations, or situations perceived as demanding. When confronted with a stressor, individuals need to initiate a “fight or flight” response, and then shut off the response once the stressor ceases. The extent to which an individual respond to the stressor—stress reactivity—is an important indicator of physiological and psychological functioning. In most instances, higher levels of Emotional Intelligence, especially Trait Emotional Intelligence, correspond with lower levels of perceived occupational or life stress.
- (ii) Individuals with high Emotional Intelligence have sufficient self-awareness to recognise negative feelings and respond accordingly to prevent these feelings from escalating. Uncontrolled and misunderstood emotions can exacerbate our vulnerability to other mental health issues, like stress, anxiety, and depression.
- (iii) Failure to address and manage stress can deteriorate one’s mental state and affect physical health, therefore, the skills associated with emotional intelligence can effectively help individuals to deal with negative emotional states like stress and promote more positive emotions in its place.



- (iv) Research into the social, psychological and medical components to stress emphasises the importance of dealing with negative emotions to effectively cope with stress and in turn, reduce the potential for negative psychological and physical health outcomes.
- (v) Our working and professional environment is a primary source of the stress, and the ability to effectively recognise and deal with emotions and emotional information in the workplace is very vital in preventing negative stress and coping with occupational stress. Emotional intelligence allows us to effectively cope with such work stress. Emotionally intelligent people also have the ability to initially evaluate situations as less stressful. This goes a long way in lessening the adverse effects of stress and aids in greater life satisfaction and joy. On the other hand, a deficit in emotional intelligence and self- regulation can lead to lower subjective well-being and a relatively exaggerated response to stressors.

From the foregoing, we have seen that the ability to effectively manage emotions and emotional information increases our ability to cope with a wide range of emotionally challenging scenarios (Salovey & Mayer, 1990).

### **3.2 Impact of Stress on Cognitive Emotional Abilities and Emotional Intelligence of Individuals**

Sometimes, we see good leaders with great track records suddenly make bad decisions. The answer lies in the impact of stress on cognitive abilities.

When the stress level of leaders is elevated, the capacity of such leaders to use cognitive ability and emotional intelligence to make timely and effective decisions is significantly impaired. This can lead to leadership failure. When a leader encounters a stressor, a cascade of neurotransmitters and hormones is released into the body resulting in a short-term increase in strength, concentration and faster reaction time. These changes may be helpful in the initial response to a stressful event. If the elevated stress becomes high enough for a long enough period of time, the deleterious effects will follow. The initial release of neurotransmitters and hormones into a person's system begins to affect major brain systems, particularly the prefrontal cortex (PFC) and the amygdala. The PFC, (which can be regarded as the CEO of the brain), controls "higher" level thinking processes, e.g., logic, analysis, decision making, etc., which makes up a significant portion of the leader's intelligent quotient (IQ) (Baumann & Turpin, 2010).

The amygdala which plays a major role in emotional responses, swings into action and responds swiftly to the incoming stimuli. But in most cases the prefrontal cortex is able to gain control once more and stops the actions of the Amygdala (Baumann & Turpin, 2010).

When the stress is too much, the prefrontal cortex is turned off, and this results in a drop in Cognitive abilities including the IQ, and an ability to control the amygdala. Increased stress turns on the amygdala, thereby creating an oversensitive heightened state of emotion. This makes the leader to lose a significant amount of ability to control his emotions, thereby becoming temporary less emotionally intelligent! Stress reduces the leader's ability to access IQ and Emotional Intelligence (EI) abilities fully (Baumann & Turpin, 2010).

#### **4.0 CONCLUSION**

We hope you enjoyed this unit. In this unit, we learnt that emotional intelligence refers to one's capacity to perceive, process and regulate emotional information accurately and effectively, both within oneself and in others and to use this information to guide one's thinking and actions and to influence those of others. We further learnt that emotional intelligence can be conceptualised in terms of: Trait Emotional Intelligence (TEI) – which refers to a collection of emotional perceptions and dispositions assessed through self-report questionnaires and Ability Emotional intelligence (AEI) - which is concerned with emotion-related cognitive abilities, measured using maximum performance tests in a similar manner to intelligent quotient (IQ). We further highlighted different categories of emotional intelligence as well as impact of stress on cognitive emotional abilities.

#### **5.0 SUMMARY**

Let us summarize what we learnt in this study. Here we started with definition of emotional intelligence. We went further to identify different categories of emotional intelligence, ways of using emotional intelligence to deal with stress and lastly, impact of stress on cognitive emotional abilities and emotional intelligence of individuals. We hope you found this unit interesting. Let us attempt the assessment presented below:

#### **6.0 TUTOR-MARKED ASSIGNMENT**

- Define emotional intelligence
- Explain the categories of emotional intelligence
- Higher levels of Emotional Intelligence, especially Trait Emotional Intelligence, correspond with lower levels of perceived occupational or life stress. Discuss.

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## **UNIT 3           STRESS AND INDIVIDUAL DIFFERENCES**

### **CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 What is Individual Differences?
  - 3.2 Core Domains of Individual Differences
    - 3.2.1 Intellectual Differences
    - 3.2.2 Personality Differences
    - 3.2.3 Conative Differences
  - 3.3 Individual Differences and Stress
    - 3.3.1 Personality and Stress
    - 3.3.2 Inborn Factor, Experience and Stress
    - 3.3.3 Age and Developmental Stage
    - 3.3.4 Culture and Stress
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References and Further Reading

### **1.0 INTRODUCTION**

Welcome to Unit 3: we will recall that in the previous unit, we started with definition of emotional intelligence. We went further to identify different categories of emotional intelligence, ways of using emotional intelligence to deal with stress and lastly, impact of stress on cognitive emotional abilities and emotional intelligence of individuals. In this unit, we will be focusing on stress and individual differences.

### **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- define individual differences
- explain core domains of individual differences
- discuss the influence of individual differences on stress manifestations.

### **3.0 MAIN CONTENT**

#### **3.1 What is Individual Differences?**

We need to note that dissimilarity is an important principle of nature because no two persons are alike, even identical twins. We all differ from

each other in many respects. These dissimilarities are seen in physical forms like in height, weight, color, complexion strength etc., as well as difference in intelligence achievement, interest, attitude, aptitude, learning habits, motor abilities, and skill. Each person also has an intellectual capacity through which he/she gains experience and learning. Every person has the emotions of love, anger, fear and feelings of pleasure and pain, in addition to the need of independence, success and need for acceptance (Bhwana, 2019).

### **3.2 Core Domains of Individual Differences**

Individual differences have traditionally been studied as three broad domains, namely: intellectual, personality, and conative.

#### **3.2.1 Intellectual Differences**

Intellectual functioning refers to the general mental ability that includes reasoning, planning, problem solving, abstract thinking, comprehending complex ideas, learning quickly and learning from experience. It is important to note that significantly limited or impaired intellectual functioning characterises intellectual disabilities.

#### **3.2.2 Personality Differences**

Personality is of interest to numerous disciplines, including the science of individual differences. Most theories typically view personality as dispositional tendencies, or “a preparedness,” to exhibit certain behavioral reactions to certain environmental affordances and demands. Within the individual difference tradition, most research has followed the “lexical approach” suggested by Galton. This approach assumes that important dimensions of human behavioral tendencies will be encoded in natural language. Using this approach to identify personality characteristics has led to a model of personality commonly referred to as the Big Five. The exact labels used to describe the dimensions have varied, but generally include (1) extraversion (includes surgency and positive emotionality factors), (2) neuroticism (includes anxiety and negative emotionality factors); (3) agreeableness, (4) conscientiousness, and (5) openness to experience. Though there is not a consensus regarding the appropriateness of this model, it is arguably the dominant model in individual difference research, and alternative models tend to be variations with two or more of the factors combined into broader factors or, alternatively, split into more narrow factors

### 3.2.3 Conative Differences

Conation, an ancient psychological concept whose dictionary definition refers to purposive striving, covers the range of motivational and volitional processes that human beings display. Motivational processes underlie the decision to pursue a goal; they are the wishes and desires that lead to intentions, in turn dictated by interest and experience. Volitional processes come into play after goals and intentions are formed; these processes reflect steps to implement goals, and ways of managing resources. Modern psychology has come to see motivation and volition as category labels for distinct conative processes.

#### SELF-ASSESSMENT EXERCISE

Explain the three broad domains of individual differences

### 3.3 Individual Differences and Stress

Definitions of individual differences point out the reality of traits that distinguish individuals. It is important to note that individual differences are the more-or-less enduring psychological characteristics that distinguish one person from another and thus help to define each person's individuality. This concept of individual differences helps us understand differences in stress reaction among people. Let us further identify different kinds of individual differences and how they interrelate with stress reaction. They are personality, inborn factors, experience, age, developmental stage and culture. Let us learn about each of the contributory factors:

#### 3.3.1 Personality and Stress

Coping responses can be examined in relation to personality models that seek to represent a comprehensive taxonomy of dispositional characteristics. For instance, the 'Big Five' model incorporates five orthogonal 'super-factors' namely:

- i. Neuroticism
- ii. Extraversion
- iii. Conscientiousness
- iv. Agreeableness
- v. Openness

**Openness** - People who like to learn new things and enjoy new experiences usually score high in openness. Openness includes traits like being insightful and imaginative and having a wide variety of interests.

**Conscientiousness** - People that have a high degree of conscientiousness are reliable and prompt. Traits include being organized, methodic, and thorough.

**Extraversion** - Extraverts get their energy from interacting with others, while introverts get their energy from within themselves. Extraversion includes the traits of energetic, talkative, and assertiveness.

**Agreeableness** - These individuals are friendly, cooperative, and compassionate. People with low agreeableness may be more distant. Traits include being kind, affectionate, and sympathetic.

**Neuroticism** - Neuroticism is also sometimes called Emotional Stability. This dimension relates to one's emotional stability and degree of negative emotions. People that score high on neuroticism often experience emotional instability and negative emotions. Traits include being moody and tense.

The above are seen to represent broad, general dimensions of personality. It is important to note that coping traits show specific patterns of relationships with these five dimensions. In particular, neuroticism plays an important role in influencing experiences of stress and associated coping responses. Individuals high in neuroticism typically report high levels of distress, which suggests that their coping attempts are generally inadequate. Consistent with this view, research evidence shows that neuroticism is associated with greater use of potentially less effective emotion-focused coping responses, including disengagement, avoidance, self-blame, wishful thinking and withdrawal, and with lesser use of problem-focused coping, positive re-appraisal, and support-seeking (Best, Stapleton, & Downey, 2005)

In contrast, extraversion is associated with positive affect and well-being, and with active forms of coping, including problem-focused strategies, positive re appraisal, and engagement coping (Bakker, van der Zee, Lewig, & Dollard, 2006). Conscientiousness also predicts coping responses, specifically, problem-solving, positive re-appraisal, cognitive restructuring, and other forms of engagement coping. Relatively few studies have examined coping in the context of openness and agreeableness but the available evidence suggests that these traits are not strongly related to coping. (Jackson, & Schneider, 2014). More recently, researchers have begun to consider how combinations of personality characteristics relate to coping traits. For instance, individuals low in neuroticism and high in conscientiousness and/or extraversion tend to use more effective coping strategies, to be less vulnerable to stress, and to have better physical health (Jackson, & Schneider, 2014)



## SELF-ASSESSMENT EXERCISE

Describe yourself in line with one of the personality traits of individual differences and ponder on how you naturally deal with stress

### 3.3.2 Inborn Factor, Experience and Stress

We hope you have attempted the self-assessment question posed above. Now let us learn about the role of inborn factors on stress. Naturally, all of us feel stressed at some point or another, some people battle with stress more frequently and this boils down to effect of genetics. It is important to note that your genes produce proteins which dictate how your body functions. These tiny differences in your genes, called *Single Nucleotide Polymorphisms (SNPs)* affect the hormones and enzymes responsible for your psychological responses. Certain genes show an elevated response to stressful events - making some people more sensitive than others. Your genetic profile shows you how susceptible you are to stress and how you handle stressful situations (Ariew, 2006).

Suffices to note that adverse life experiences during the early developmental period, have long-term effects on the brain, stress-elicited behaviours, endocrine function, and physiological responses in a variety of species. Early-life adversity in humans can predispose individuals to neuropsychiatric disorders and suicidality (Brigandt, 2005). Childhood abuse and neglect are also associated with adverse behavioural risk factors in adulthood, including smoking, physical inactivity, obesity, depression, and cardiovascular disease (Brigandt, 2005).

Prolonged early-life Maternal Separation (MS) is a widely used rodent model of early-life adversity where pups are deprived of maternal contact for variable time periods during the early weeks of life (Brigandt, 2005). Most reports document myriad negative effects of MS including: increased anxiety-like behaviour, depression-like behaviour, and exaggerated hypothalamic-pituitary adrenal (HPA) axis stress responses. There are discrepancies in the MS literature, with certain studies unable to confirm such behavioural and neuroendocrine findings (Brigandt, 2005). For instance, some reports failed to see effects of MS on anxiety measures, and another showed that MS decreased contextual and auditory fear conditioning rather than increasing it. These conflicting results likely stem from a host of factors, including varied experimental procedures, gender, and rat strain that was used. Importantly, these findings suggest that early-life stress is not uniformly deleterious and its long term effects may depend upon an organism's innate level of stress reactivity (Burkhardt, 2005).

### 3.3.3 Age and Developmental Stage

Age and developmental stage impact how individuals react to stress. Most studies show that older adults differ in terms of approaches to coping with stress as compared with younger adults. Elderly adults are perceived to have less control over their environment than adults, which may adversely affect their coping. Looking specifically at age differences in life satisfaction, perceived stress and coping resources among younger adults (18–40 years), middle-aged adults (41–65 years) and older adults (66 years and over), research found that perceived stress decreased with age and that middle-aged and older adults reported more effective coping resources than younger adults. Also, for the two older adult groups, efficiency of coping resources was the best predictor of life satisfaction, while perceived stress was the best indicator for the younger adult group (Brigandt, 2005).

Developmental research on children and adolescents suggests that as individuals mature their coping capacities expand and they are better able to successfully utilize coping strategies that are effective for specific situations (Zimmer-Gembeck & Skinner, 2011). Zimmer-Gembeck and Skinner (2008) point out that adolescents are more flexible in their coping than children, but may lean primarily towards managing emotional tension; however, distraction becomes a common coping strategy in adulthood. Heiman (2004) used the sense of coherence model (Antonovsky, 1979) to also examine students' psychosocial resources, perceived stress and coping styles. It was observed that younger students employed more emotional strategies and reported having more social support from friends than older students; and women were more likely than men to use avoidant and emotional coping. The author suggests that stress, coping and social support are significant and interconnected facets of the environment in which students interact and develop (Heiman, 2004).

### 3.3.4 Culture and Stress

The patterns of stressors that individuals are likely to face, is profoundly affected by their (sub) cultural context. There are two ways in which culture can affect the experience of stress.

- i. First, certain stressful life events can be seen as normative— that is, most individuals in a given culture or cultural subgroup will experience a particular event at specified times in their lives. Adolescent puberty rituals are one example of a normative life event while retirement is another.

- ii. Second, by differentially allocating social resources, cultures pattern the types and levels of stress that individuals are likely to experience. For example, contrast the types of stressors faced by inner-city children versus those in an affluent suburb. While the latter may face achievement-related problems such as the fierce academic competition in top-ranked schools and the anguish of whether they can live up to the achievement expectations of the parents, get into an ivy league college, the former may face more fundamental problems, such as problems in housing, nutrition, and family stability, as well as inadequate and often violent schools.

#### **4.0 CONCLUSION**

In this unit, we noted that dissimilarity is an important principle of human nature because no two persons are alike, even identical twins. Thus individual differences can be studied within the following three core domains: intellectual, personality and conative differences. Linking individual differences to stress manifestations, we noted the influence of personality, inborn factor, experience, age, developmental stage, culture on stress.

#### **5.0 SUMMARY**

Let us summarise what we learnt in this study. Here we started with definition of individual differences in addition to listing and explaining the core domains of individual differences. We also learnt about the correlation between individual difference and stress. We hope you found this unit interesting. Let us attempt the assessment presented below:

#### **6.0 TUTOR-MARKED ASSIGNMENT**

Explain the influence of the following concepts relating to individual differences on stress:

- Personality
- Culture
- Age
- Genetic makeup.

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## **MODULE 4      STRESS AND COPING MEASURES**

- Unit 1      Cognitive Behavioural Therapy (CBT) as Coping Strategy for Stress
- Unit 2      Relaxation and exercise Techniques
- Unit 3      Nutrition as a Coping Strategy for Stress

### **UNIT 1      COGNITIVE BEHAVIOURAL THERAPY (CBT) AS COPING STRATEGY FOR STRESS**

#### **CONTENTS**

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- 3.0    Main Content
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    - 3.1.2    What are the Goals of Cognitive Behavioural Therapy?
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  - 3.2    Types of Cognitive Behavioural Therapy
    - 3.2.1    Rational Emotive Behavioural Therapy
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  - 3.3    Steps in Cognitive Behavioural Therapy in Stress Management
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    - 3.3.5    Decision Making: Weighing Pros and Cons
    - 3.3.6    Cognitive Restructuring
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  - 3.4    Cognitive Behavioural Therapy: Areas of Application
- 4.0    Conclusion
- 5.0    Summary
- 6.0    Tutor-Marked Assignment
- 7.0    Reference/Further reading
- 1.0    INTRODUCTION**

Welcome to Module 4. In this module, we shall learn several coping mechanisms and strategies for stress. They are psychological,

behavioural-related strategies that include: the Cognitive Behavioural Therapy (CBT), nutrition therapy, relaxation techniques and exercises. More specifically, this unit will focus on Cognitive Behavioural Therapy as coping strategy for stress, benefit of Cognitive Behavioural Therapy (CBT), as well as types of Cognitive Behavioural Therapy and corresponding steps. Enjoy your study.

## **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- discuss the role of Cognitive Behavioural Therapy (CBT) as coping strategy for stress
- explain the benefit of Cognitive Behavioural Therapy (CBT) as coping strategy for Stress
- list and explain the types of Cognitive Behavioural Therapy (CBT)
- recall steps in Cognitive Behavioural Therapy.

## **3.0 MAIN CONTENT**

### **3.1 Cognitive Behavioural Therapy (CBT) As Coping Strategy for Stress**

We naturally feel a certain amount of stress when we come face to face with challenges in life. When we are feeling self-confident and in control, we can manage our way through stress triggering situations, without too much discomfort.

However, in certain situations, for example, under conditions of prolonged stress or following a traumatic incident, stress levels can intensify. This is because, physiological and psychological stress symptoms become more severe. Stress symptoms, such as, excessive worry, heart racing, churning stomach, etc., can begin to interfere with our overall well-being and start to make specific or everyday life situations difficult to cope with.

Cognitive Behavioural Therapy (CBT) can provide you with a new perspective on your situation, enabling you to regain control, reduce the intense physiological and emotional symptoms and adopt effective strategies that will help you deal with stressful situations with more confidence and ease. Before discussing specific cognitive-behavioural coping strategies, it is important to first understand what cognitive-behavioural therapy is.

#### **3.1.1 What is Cognitive Behavioural Therapy (CBT)**

Cognitive-behavioural therapy is one that is based on the idea that psychological problems arise as a result of the way in which we interpret or evaluate situations, thoughts, and feelings, as well as our behaviours. The underlying concept behind CBT is that our *thoughts and feelings play a fundamental role in our behaviour*. For example, a person who spends a lot of time thinking about plane crashes, runway accidents and other air disasters may find themselves avoiding air travel.

CBT is based on the combination of the basic principles from behavioural and cognitive psychology. It is different from historical approaches to psychotherapy, such as the psychoanalytic approach where the therapist looks for the unconscious meaning behind the behaviours and then formulates a diagnosis. Instead, CBT is a "problem-focused" and "action-oriented" form of therapy, meaning it is used to treat specific problems related to a diagnosed mental disorder. The therapist's role is to assist the client in finding and practicing effective strategies to address the identified goals and decrease symptoms of the disorder.

CBT is based on the belief that thought distortions and maladaptive behaviours play a role in the development and maintenance of psychological disorders, and that symptoms and associated distress can be reduced by teaching new information-processing skills and coping mechanisms.

### **SELF-ASSESSMENT EXERCISE**

According to Cognitive Behaviour Therapy, psychological differences is triggered and sustained by -----

#### **3.1.2 What are the Goals of Cognitive Behavioural Therapy?**

The goal of cognitive behaviour therapy is to teach patients that while they cannot control every aspect of the world around them, they can take control of how they *interpret* and deal with things in their environment. It tries to get people back doing the things that they want to do, allowing them to get back into their daily lives and the things that they enjoy. It helps people to problem-solve things that are making them worried, things that are affecting their lives negatively.

And it helps them adjust their thinking so that they can think about and adapt to the things that are happening to them; this allows them to adjust the way they behave and think about their problems in a way that is not as negative and instead in a way that is potentially more positive and more productive.

#### **3.1.3 What are the Benefits of CBT Therapy for Stress?**



Cognitive Behaviour Therapy helps us to:

- i. Discover why specific situations create a stress response in us.
- ii. Learn how particular patterns of thinking and behaviour we hold may be keeping us stuck and preventing us from feeling better
- iii. Discover new ways of thinking and behaving that can eliminate some stress factors from our life completely and enable us to cope better with unavoidable situations which can make us feel stress
- iv. Develop a new understanding and increased confidence in our ability to deal with stressful situations in the future (Lynch, Laws, & McKenna, 2010).

### **SELF-ASSESSMENT EXERCISE**

What are the benefits of cognitive behavior therapy?

## **3.2 Types of Cognitive Behavioural Therapy (CBT)**

There are a number of specific types of therapeutic approaches that involve CBT that are regularly used by mental health professionals. Examples of these include:

### **3.2.1 Rational Emotive Behavioural Therapy**

This type of CBT is centered on identifying and altering irrational beliefs. The process of REBT involves identifying the underlying irrational beliefs, actively challenging these beliefs, and finally learning to recognize and change these thought patterns. The REBT framework posits that humans have both innate rational (meaning self-helping, socially helping, and constructive) and irrational (meaning self-defeating, socially defeating, and unhelpful) tendencies and leanings. REBT claims that people to a large degree consciously and unconsciously construct emotional difficulties such as self-blame, self-pity, clinical anger, hurt, guilt, shame, depression and anxiety, and behaviour tendencies like procrastination, compulsiveness, avoidance, addiction and withdrawal by the means of their irrational and self-defeating thinking, emoting and behaving.

### **3.2.2 Cognitive Therapy**

This form of therapy is centered on identifying and changing inaccurate or distorted thinking patterns, emotional responses, and behaviours. Cognitive therapy is based on the cognitive model, which states that

thoughts, feelings and behaviour are all connected, and that individuals can move toward overcoming difficulties and meeting their goals by identifying and changing unhelpful or inaccurate thinking, problematic behaviour, and distressing emotional responses. This involves the individual working collaboratively with the therapist to develop skills for testing and modifying beliefs, identifying distorted thinking, relating to others in different ways, and changing behaviours.

### 3.2.3 Multimodal Therapy

This form of CBT suggests that psychological issues must be treated by addressing seven different but interconnected modalities, which are:

- i. Behaviour
- ii. Affect
- iii. Sensation
- iv. Imagery
- v. Cognition
- vi. Interpersonal factors
- vii. Drug/biological considerations

### 3.2.4 Dialectical Behaviour Therapy (DBT)

This type of cognitive-behavioural therapy addresses thinking patterns and behaviours and incorporates strategies such as emotional regulation and mindfulness. DBT is considered part of the "third wave" of cognitive behavioural therapy, and DBT adapts CBT to assist patients to deal with stress. All DBT can be said to involve four components namely:

**Individual** – The therapist and patient discuss issues that come up during the week (recorded on diary cards) and follow a treatment target hierarchy. Self-injurious and suicidal behaviours, or life-threatening behaviors, take first priority. Second in priority are behaviors which, while not directly harmful to self or others, interfere with the course of treatment. These behaviours are known as therapy-interfering behaviors. Third in priority are quality of life issues and working towards improving one's life generally. During the individual therapy, the therapist and patient work towards improving skill use. Often, a skills group is discussed and obstacles to acting skillfully are addressed.

**Group** – A group ordinarily meets once weekly for two to two and a half hours and learns to use specific skills that are broken down into four skill modules: core mindfulness, interpersonal effectiveness, emotion regulation, and distress tolerance.

**Therapist Consultation Team** – A therapist consultation team includes all therapists providing DBT. The meeting occurs weekly and serves to support the therapist in providing the treatment.

**Phone Coaching** – Phone coaching is designed to help generalize skills into the patient's daily life. Phone coaching is brief and limited to a focus on skills.

DBT strives to have the patient view the therapist as an ally rather than an adversary in the treatment of psychological issues. Accordingly, the therapist aims to accept and validate the client's feelings at any given time, while, nonetheless, informing the client that some feelings and behaviours are maladaptive, and showing them better alternatives. DBT focuses on the client acquiring new skills and changing their behaviours.

### **3.3 Steps in Cognitive Behavioural Therapy for Stress Management**

The following are steps in CBT for stress management:

#### **3.3.1 Diaphragmatic Breathing**

Diaphragmatic breathing also called breathing retraining or deep breathing is a very basic cognitive-behavioural coping strategy for managing anxiety. It is a simple technique, but it can be very powerful. Diaphragmatic breathing can be used as a way to manage your anxiety and stress.

#### **STEPS**

- i. Sit comfortably, with your knees bent and your shoulders, head and neck relaxed.
- ii. Place one hand on your upper chest and the other just below your rib cage. This will allow you to feel your diaphragm move as you breathe.
- iii. Breathe in slowly through your nose so that your stomach moves out against your hand. The hand on your chest should remain as still as possible.
- iv. Tighten your stomach muscles, letting them fall inward as you exhale through pursed lips. The hand on your upper chest must remain as still as possible.

#### **SELF-ASSESSMENT EXERCISE**

Practice the diaphragmatic breathing exercise

### 3.3.2 Progressive Muscle Relaxation

Using cognitive-behavioural relaxation exercises can be an effective way to reduce your stress and anxiety. One relaxation exercise called progressive muscle relaxation focuses on a person alternating between tensing and relaxing different muscle groups throughout the body. In this way, relaxation is viewed like a pendulum. A complete relaxation of your muscles can be obtained by first going to the other extreme (that is, by tensing your muscles). In addition, by tensing your muscles (a common symptom of anxiety) and immediately relaxing them, the symptom of muscle tension may become a signal to relax over time (Beck, 2011).

#### SELF-ASSESSMENT EXERCISE

Practice the progressive muscle relaxation

### 3.3.3 Self-Monitoring

Self-monitoring is a very basic cognitive-behavioural coping strategy, and it is pretty much at the core of all of the cognitive-behavioural coping strategies. In order to address a problem or a symptom, we need to first become aware of it. Self-monitoring can help with this. There are a number of steps to self-monitoring; however, the steps can easily be learned and quickly applied to your life.

#### STEPS

- i. Type or write up a self-monitoring form and make enough copies for at least a week. At the top of the page, make five columns labelled: date and time; situation; thoughts; emotions; physical sensations.
- ii. Keep this form with you throughout the day. Whenever you experience an unpleasant or uncomfortable thought or feeling, take out the form and fill it out.
- iii. First, write down the date and time.
- iv. Next, write down the situation you are in. For example, when did these unpleasant thoughts and feelings come up? Were you involved in a conversation? Were you thinking about something from your past? Briefly describe this situation.
- v. After you describe the situation, write down the thoughts you are having.
- vi. Then, write down the emotions you are feeling. Words you may use to describe your emotions may be: mad, sad, upset, anger, down, anxious, fear, guilt, shame, embarrassment, jealous, etc.
- vii. Now, write down the physical sensations that you are experiencing. For example, did your heart rate speed up? Are you

experiencing muscle tension? Do you feel queasy or is your stomach upset?

- viii. It may be useful to also rate how intense or upsetting these thoughts, emotions, and physical sensations are by rating each on a scale from 1 (no distress/not intense) to 10 (very distressing/intense).

## **SELF-ASSESSMENT EXERCISE**

Practice self-monitoring

### **3.3.4 Behavioural Activation**

When people feel depressed or anxious, they may be less likely to do the things they enjoy, and therefore, it is important to learn how to be more active. Behavioural activation is a way to do this. The goal of behavioural activation is simple. It helps people get more active in areas of their life that are pleasurable and enjoyable. Being more connected and involved with these experiences can improve your mood. Examples include:

- i. Activity scheduling
- ii. Activity structuring
- iii. Problem-solving
- iv. Social skill training
- v. Hierarchy construction (ranking how easy certain activities are to accomplish)
- vi. Shaping (training healthy behaviours)

### **3.3.5 Decision-Making: Weighing Pros and Cons**

When faced with a decision, we sometimes may feel paralyzed or trapped. We may not know what the best choice is. One way to move forward is to weigh the short- and long-term pros and cons of a situation. Doing so can help us identify the best path (that is, a path that is associated with low risk and is consistent with our goals and priorities) to take.

### **3.3.6 Cognitive Restructuring**

Cognitive restructuring is a common cognitive-behavioural coping strategy. How we evaluate and think about ourselves, other people and events can have a major impact on our mood. Cognitive restructuring focuses on identifying negative thoughts or evaluations and modifying them. This may be done by gathering evidence for and against certain thoughts. By modifying our thoughts, we may be able to improve our mood and make better choices with regard to behaviours.

### **3.3.7 Setting and Managing Goals**

It is very important to have goals in your life. Goals (or things that you want to accomplish in the future) can give your life purpose and direction, as well as motivate healthy behaviors focused on improving your life. However, goals can also be very overwhelming and a source of stress. Therefore, you have to be careful when you set goals. It is important that goals are approached in a way that improves your mood and quality of life, as opposed to increasing distress.

### **3.4 Cognitive Behavioural Therapy: Areas of Application**

Cognitive behavioural therapy can be used to manage:

- i. Stress at work / career / business management
- ii. Relationship Stress
- iii. Stress accompanied by anxiety and/or depression
- iv. Stress that seems pervasive in many areas of your life
- v. Stress that does not make sense when you feel you “should feel ok”
- vi. Stress caused by particular life changes
- vii. Stress activated by the desire to succeed in life
- viii. Stress caused by challenging family situations / relationships
- ix. Stress caused by loneliness or longing for a partner/relationship
- x. Stress triggered from the experience of a traumatic event
- xi. Stress caused by low-self-esteem or low self-confidence
- xii. Stress triggered by social situations / social anxiety
- xiii. Stress which arises when you need to perform or take certain actions.

## **4.0 CONCLUSION**

We hope you enjoyed your studies and have attempted your self-assessment exercises. In this unit, we have carefully discussed cognitive behavioral therapy as a technique used to manage Stress, as well as identify its goals, types and steps in the management of stress.

## **5.0 SUMMARY**

Conclusively, you can testify that this unit is well explained. Therefore, as a public health student, the knowledge gained from this unit will help you presently and the in future.

## **6.0 TUTOR-MARKED ASSIGNMENT**

Explain with appropriate examples the steps in Cognitive Behavioural Therapy for Stress Management.

## 7.0 REFERENCES/FURTHER READING

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**UNIT 2 RELAXATION AND EXERCISE TECHNIQUES****CONTENTS**

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
  - 3.1 The Concept of Relaxation Techniques
    - 3.1.1 Types of Relaxation Techniques
      - 3.1.1.1 Autogenic relaxation
      - 3.1.1.2 Progressive Muscle Relaxation
      - 3.1.1.3 Visualisation
    - 3.2 Benefit of Relaxation Technique
    - 3.3 Exercise as Coping Strategy
      - 3.3.1 Some Exercises for Stress Management
- 4.0 Conclusion
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- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

**1.0 INTRODUCTION**

You may recall that in Unit 2 of this module, we learnt about the concept of Cognitive Behavioural Therapy, which is a psychological therapy that helps in stress management. Specifically, the goals, types and steps of this therapeutic method were identified. Enjoy your studies and do not forget to consult other textbooks and online resources to further broaden the scope of your knowledge in this area for professional and personal use. In this unit, we shall be discussing the concept of Relaxation and exercises, their technique, types and benefits.

**2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- describe the concept of relaxation technique
- explain types of relaxation techniques
- examine benefit of relaxation techniques.

**3.0 MAIN CONTENT****3.1 The Concept of Relaxation Technique**

The relaxation technique can be thought of as a generalised psychophysiological response primarily decreasing sympathetic nervous system activity and possibly increasing activity of the parasympathetic



nervous system. Physiological correlates of the relaxation response include decreased heart and respiratory rates, lowered metabolism rate and blood pressure, reduced muscle tension, increased skin temperature in the extremities, and predominance of alpha brain wave activity.

Relaxation techniques are a great way to help with stress management. Relaxation is not only about peace of mind or enjoying a hobby. Relaxation is a process that decreases the effects of stress on our mind and body. Relaxation techniques can help us cope with everyday stress and with stress related to various health problems, such as heart disease and pain.

Whether our stress is spiralling out of control or we have already got it tamed, we can benefit from learning relaxation techniques. Learning basic relaxation techniques is easy. Relaxation techniques also are often free or low cost, pose little risk, and can be done nearly anywhere. (Freeman, 2009).

Explore these simple relaxation techniques and get started on de-stressing your life and improving your health.

### **3.1.1 Types of Relaxation Techniques**

Health professionals such as complementary health practitioners, public health experts, doctors and psychotherapists can teach various relaxation techniques. But if you prefer, you can also learn some relaxation techniques on your own.

In general, relaxation techniques involve refocusing your attention on something calming and increasing awareness of your body. It does not matter which relaxation technique you choose. What matters is that you try to practice relaxation regularly to reap its benefits.

#### **SELF-ASSESSMENT EXERCISE**

Complete this statement

In general, relaxation techniques involve refocusing your attention on ---  
-----

The following are therefore types of relaxation techniques:

#### **3.1.1.1 Autogenic Relaxation**

Autogenic means something that comes from within you. This has the effect of producing the physiological changes of the relaxation response. Autogenic relaxation, also known as autogenic therapy, utilises the body's

natural relaxation response to counteract unwanted mental and physical symptoms. Through the use of breathing techniques, specific verbal stimuli, and mindful meditation, autogenic training can help people seeking treatment to reduce stress and achieve relaxation of the body and mind. In this relaxation technique, you use both visual imagery and body awareness to reduce stress.

You repeat words or suggestions in your mind that may help you relax and reduce muscle tension. For example, you may imagine a peaceful setting and then focus on controlled, relaxing breathing, slowing your heart rate, or feeling different physical sensations, such as relaxing each arm or leg one by one. (Freeman, 2009).

### **SELF-ASSESSMENT EXERCISE**

Practice an autogenic relaxation technique.

#### **3.1.1.2 Progressive Muscle Relaxation.**

In this relaxation technique, you focus on slowly tensing and then relaxing each muscle group. This can help you focus on the difference between muscle tension and relaxation. You can become more aware of physical sensations. Doctors and Public Health practitioners have used progressive muscle relaxation in combination with standard treatments for symptom relief in a number of conditions, including headaches, cancer pain, high blood pressure, and digestive disturbances.

The technique of progressive muscle relaxation was described by Edmund Jacobson in the 1930s and is based upon his premise that mental calmness is a natural result of physical relaxation. Progressive muscle relaxation can be learned by nearly anyone and requires only 10 minutes to 20 minutes per day to practice. (Freeman, 2009).

In one method of progressive muscle relaxation, you start by tensing and relaxing the muscles in your toes and progressively working your way up to your neck and head. You can also start with your head and neck and work down to your toes. Tense your muscles for about five seconds and then relax for 30 seconds, and repeat.

#### **3.1.1.3 Visualisation**

In this relaxation technique, you may form mental images to take a visual journey to a peaceful, calming place or situation.

To relax using visualisation, try to incorporate as many senses as you can, including smell, sight, sound and touch. If you imagine relaxing at the

ocean, for instance, think about the smell of salt water, the sound of crashing waves and the warmth of the sun on your body. The following are different relaxing visualisation scripts:

- i. *Beach Visualisation*: Visualisation relaxation is an effective way to relax the mind and body by picturing a relaxing scene. This script guides you to imagine relaxing on a beautiful beach. The beach is one of the most popular visualisation scripts.
- ii. *Forest Visualisation*: This Forest Visualisation is a guided imagery relaxation script in which you imagine walking through a beautiful forest in the mountains.
- iii. *Candle Visualisation Relaxation*: This candle relaxation is a guided imagery script in which you are guided to imagine relaxing while looking at a candle. You can relax your body and mind by focusing on the candle.
- iv. *Calming Color Relaxation Visualisation*: This calming colour relaxation script allows you to relax with visualisation by imagining each colour of the rainbow.
- v. *Floating on a Cloud*: This relaxation script is a calming visualisation that will guide you to imagine floating on a cloud.
- vi. *Peaceful Place*: This script will allow you to relax your mind and imagine your own safe, peaceful place. This place will be an imaginary area that you can visualise to help calm and relax your mind when you are feeling stressed. This is one of the top visualisation scripts for using your own imagination.
- vii. *Peaceful Meadow*: The guided imagery in this relaxation script will guide you to imagine relaxing in a peaceful meadow.
- viii. *Starry Sky*: This starry sky relaxation is a guided imagery script that will describe relaxing at dusk and watching the stars appear in the night sky.

### 3.2 The Benefits of Relaxation Techniques

When faced with numerous responsibilities and tasks or the demands of an illness, you can make relaxation a priority in your life. Practicing relaxation techniques can have many benefits, including:

- i. Slowing heart rate
- ii. Lowering blood pressure
- iii. Slowing your breathing rate
- iv. Improving digestion
- v. Maintaining normal blood sugar levels
- vi. Reducing activity of stress hormones
- vii. Increasing blood flow to major muscles
- viii. Reducing muscle tension and chronic pain
- ix. Improving concentration and mood
- x. Improving sleep quality

- xi. Lowering fatigue
- xii. Reducing anger and frustration
- xiii. Boosting confidence to handle problems

To get the most benefit, use relaxation techniques along with other positive coping methods, such as thinking positively, finding humor, problem-solving, managing time, exercising, eating right, getting enough sleep, and reaching out to supportive family and friends.

### **3.3 Exercise as Coping Strategy**

Physical activity can help lower your overall stress levels and improve your quality of life, both mentally and physically. Exercising regularly can have a positive effect on your mood by relieving the tension, anxiety, anger, and mild depression that often go hand-in-hand with stress. It can improve the quality of your sleep, which can be negatively impacted by stress, depression, and anxiety. It can also help boost your confidence levels.

Physical activity improves your body's ability to use oxygen and also improves blood flow. Both of these changes have a direct effect on your brain. Exercise also increases your brain's production of endorphins. Endorphins are the "feel-good" neurotransmitters that are responsible for the coveted "runner's high." This is the sense of well-being and euphoria that many people experience after exercise (Anish, 2005).

Physical activity can also help take your mind off your worries. The repetitive motions involved in exercise promote a focus on your body, rather than your mind. By concentrating on the rhythm of your movements, you experience many of the same benefits of meditation while working out. Focusing on a single physical task can produce a sense of energy and optimism. This focus can help provide calmness and clarity. Some people notice an improvement in their mood immediately after a workout. Those feelings do not end there, but generally become cumulative over time. Chances are, you will notice increased feelings of well-being as you stay committed to a consistent exercise routine.

In addition to having a direct effect on your stress levels, regular exercise also promotes optimum health in other ways. Improvements to your overall health may help indirectly moderate your stress levels. By improving your physical wellness and heart health, you will have less to feel stressed about.

Among some of its additional benefits, exercise can help:

- i. strengthen your muscles and bones
- ii. strengthen your immunity, which can decrease your risk of illness and infection
- iii. lower your blood pressure, sometimes as much as some antihypertensive medications
- iv. boost levels of good cholesterol in your blood
- v. improve your blood circulation
- vi. improve your ability to control weight
- vii. help you sleep better at night
- viii. boost your energy
- ix. improve your self-image

### **SELF-ASSESSMENT EXERCISE**

Discuss the role of exercise as a coping mechanism.  
Explain the components of Autogenic Relaxation.

#### **3.3.1 Some Exercises for Stress Management**

Below are some exercises that can help to reduce stress:

##### **Yoga**

Yoga postures are a form of strength training, making you more resilient and flexible, which in turn relieve physical tension. It also uses deep breathing, which triggers the body's relaxation response. But perhaps yoga's biggest benefit is the mental focus it promotes. Focus is key to stress management.

Yoga — a mind-body practice — is considered one of many types of complementary and integrative health approaches. Yoga brings together physical and mental disciplines that may help you achieve peacefulness of body and mind. This can help you relax and manage stress and anxiety.

Yoga has many styles, forms and intensities. Hatha yoga, in particular, may be a good choice for stress management. Hatha is one of the most common styles of yoga, and beginners may like its slower pace and easier movements. But most people can benefit from any style of yoga — it is all about your personal preferences.

The core components of Hatha Yoga are:

- i. Poses: Yoga poses, also called postures, are a series of movements designed to increase strength and flexibility. Poses range from

- lying on the floor while completely relaxed to difficult postures that may have you stretching your physical limits.
- ii. **Breathing:** Controlling your breathing is an important part of yoga. Yoga teaches that controlling your breathing can help you control your body and quiet your mind.
  - iii. **Meditation or relaxation:** In yoga, you may incorporate meditation or relaxation. Meditation may help you learn to be more mindful and aware of the present moment without judgment (Edenfield, & Blumenthal, 2011).

### **Walking**

Walking is easy to do and requires no classes or special equipment. Walking frequently can reduce the incidence of many of the stress-related conditions, including cardiovascular disease, high blood pressure, cholesterol, and type 2 diabetes. People with regular walking regimens also report reduced stress levels and a self-confidence that comes from taking an active role in their well-being. “Walking releases tension from the major muscle groups deepens the breathing and quiets the nervous system.” (Edenfield, & Blumenthal, 2011).

### **Dancing**

Dancing has many physical, mental and even emotional benefits. It is a great workout that improves grace and agility as it raises your heart rate. And researchers have found that people who ballroom dance twice a week have less risk of developing dementia, perhaps because learning new steps challenges your brain too. Dancing also fosters a sense of community and connection to other people, which lowers stress levels and boosts happiness (Wenzel, Glanz, & Lerman, 2002).

## **4.0 CONCLUSION**

We have seen in this unit that relaxation and physical activities can help lower your overall stress levels and improve your quality of life, both mentally and physically. Thus, exercising regularly can have a positive effect on your mood by relieving the tension, anxiety, anger, and mild depression that often go hand-in-hand with stress. It is important to improve our exercise activities in order to cope better with challenges as public health practitioners.

## **5.0 SUMMARY**

We hope you learnt a lot from this unit and have taken note of all the self-assessment exercises. In this unit, we presented an overview of relaxation exercises as well as physical activities. Specifically, we learnt types of relaxation techniques, which include progressive muscle relaxation, visualization, etc, as well as some exercises for stress management.

## 6.0 TUTOR-MARKED ASSIGNMENT

Explain the different types of Visualization

## 7.0 REFERENCES/FURTHER READING

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## **UNIT 3 NUTRITION AS A COPING STRATEGY FOR STRESS**

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### **1.0 INTRODUCTION**

Welcome to Unit 3 of this module. In the previous unit, which is unit 2, we focused on relaxation and exercises as coping strategies for stress. In this unit, we shall be focusing on nutrition as a coping strategy for stress. As a Public Health student, we are sure that you can appreciate the importance of nutrition in stress management, thus you will agree with us when we state that one important aspect of managing stress is practicing good nutrition and healthy eating habits. These habits can help you through your stressful times now, and even prevent a heart attack 30 years down the road. This Unit will explore the importance of balanced diet, how to maintain a balanced diet and how to achieve success in diet.

### **2.0 OBJECTIVES**

By the end of this unit, you should be able to:

- explain the role of nutrition in stress management
- discuss the importance of balanced diet in the management of stress



- describe the function of several nutrients required in the maintenance of balanced diet and stress management
- demonstrate how to achieve success in diet
- describe the importance of moderation in food consumption.

### **3.0 MAIN CONTENT**

#### **3.1 Nutrition as Stress Management**

Nutrition is the study of how food and drink affects our bodies with a special regard to the essential nutrients necessary to support human health. It looks at the physiological and biochemical processes involved in nourishment and how substances in food provide energy or are converted into body tissues. A balanced diet is a nutritional system that supplies the body with nutrients, vitamins, and minerals necessary to maintain the functionality of the whole system, which is the human body. Management of stress may be a powerful tool for staying healthy. Researchers have investigated the relationships between stress and many different medical problems, such as cardiovascular disease, diabetes, and cholesterol levels. Stress creates greater physiological demands. More energy, oxygen, circulation, and therefore more metabolic cofactors are needed (e.g. vitamins and minerals). The irony of stress is that people suffering stress need a more nutritionally dense diet but often opt for comfort foods (like sugary and fatty foods) lacking in the necessary nutrients, consequently inducing a situation of nutrient depletion that further compromises the metabolic systems. Stress not only influences the choice of food of a person but also the quantity of the food eaten.

Role of specific nutrient in regulation of food intake, in the maintenance of homeostatic mechanisms and emotional processes is very important. Serotonin (5-hydroxytryptamin or 5-HT) is synthesised from the dietary amino-acid tryptophan (TRP). Likewise, tyrosine is a precursor of noradrenaline (NA). Psychosocial and physical stress increases the rate of release of noradrenaline (NA) in both the periphery and the central nervous system hence more protein especially tyrosine is required. Likewise, various other nutrients are required to reduce the levels of the stress chemicals (cortisol and adrenaline) that activate fight and flight response in the body. A detail description of various nutrients and role in coping with stress is discussed later

#### **3.2 Importance of Balanced Diet**

We all know that eating well will increase our physical, mental, and emotional stamina. Fuelling yourself with nutrient dense foods can boost your immune system, help you maintain a healthy weight, and help you feel better about yourself. Healthy eating plays a crucial role in your

ability to deal with times of extra stress. Carbohydrates, protein, fat, vitamins, and minerals are all important for energy, mental concentration, and emotional stability.

Some great healthy foods that can reduce stress are fresh fruits and vegetables, which contain stress-busting antioxidants, especially berries and green, leafy vegetables. Another great option is oatmeal with cinnamon and honey which can bump up the feel-good hormone serotonin. It is also packed with slow-to-digest fiber; therefore, it will not cause an inconsistent spike in blood sugar levels. Dark chocolate-covered almonds can also reduce levels of stress hormones because they are rich in energy-boosting protein and good-for-you monounsaturated fat. Also note that stress may weaken your immune system and increase your body's need for certain nutrients.

A balanced diet therefore will help you stay focused, alert, energetic, and healthy during times of stress. However, if you live off on fast food or skip meals, you are more likely to perform poorly or get sick during stressful times. A daily multivitamin/mineral supplement can be helpful at any age, but it will not replace the role that whole foods play in maintaining a healthy body. Whole foods contain many substances, such as phytochemicals and fiber, which boost the immune system and maintain health.

## **SELF-ASSESSMENT EXERCISE**

Nutrition is an important coping strategy for stress. Discuss

### **3.3 Important Nutrients for Stress Management**

We hope you have tried out the self-assessment exercise listed above. The goal is for you to ‘think outside the box’ and consult relevant literature in the explanation of the role of nutrition in stress management. We hope you were able to gain deeper insight in this area. Now, let us learn about the food and nutrients that helps in the maintenance of balanced diet. In order to maintain a balanced diet, the food we eat must contain the following:

#### **3.3.1 Omega 3 Fatty Acids**

The brain needs omega 3 fatty acids for the formation of healthy nerve cells. It has also been reported that omega 3 fatty acids are associated with a lower risk of depression. Evidence from epidemiological, laboratory and clinical studies suggest that dietary lipids and other associated nutritional factors may influence vulnerability and outcome in depressive disorders. Flaxseed, hemp, canola and walnut oils are all generally rich sources of

the parent omega-3, alpha linolenic acid (ALA). Dietary ALA can be metabolized in the liver to the longer-chain omega-3 eicosapentaenoic (EPA) and docosahexaenoic acid (DHA). This conversion is limited in human beings, it is estimated that only 5-15% of ALA is ultimately converted to DHA and stress compromises this conversion. DHA (Docosahexaenoic acid) an essential component of the membrane of brain cells, enhances brain to utilise various chemicals and can turn on the genes that make serotonin. It is a good natural anti-depressant (Bourre, 2004).

### 3.3.2 Proteins

**Tryptophan:** Tryptophan is an amino acid found in milk as well as in many proteins rich foods like whole grains. Serotonin is synthesised from tryptophan. Tryptophan works with vitamin B6, niacin and magnesium to synthesise serotonin. If too little tryptophan is available for the brain, then it may limit the amount of serotonin. To make tryptophan-laden meals more effective, make them high in complex carbohydrates but medium to low in protein. Carbohydrate makes tryptophan more available in the brain but protein has the opposite effect (Hakur, Singh & Karuna 2013).

### 3.3.3 Phenylalanine and Tyrosine

Phenylalanine and tyrosine promote alertness, vitality and help in increasing the rate at which brain neurons produce antidepressants-dopamine and norepinephrine. Vitamin C is required to metabolise phenylalanine and tyrosine effectively. This show, rich source of vitamin C like citrus fruits may help in metabolism of phenylalanine and tyrosine. Tofu, dairy products, bananas, avocados, lima beans, pumpkin seeds, sesame seeds and almonds are the main sources of phenylalanine and tyrosine (Batmanghelidj, 2000).

### 3.3.4 Heanine

Heanine has been studied for its potential ability to reduce mental and physical stress, improve cognition, and boost mood and cognitive performance in a synergistic manner with caffeine. It relaxes the brain, thereby reducing stress and anxiety with tranquilizing effects. Heanine significantly increases activity in the alpha frequency band which indicates that it relaxes the mind without inducing drowsiness. However, this effect has only been established at higher doses than that typically found in a cup of black tea (approximately 20 mg). Tea is a good source of threonine (Health Botanicals, 2007).

### 3.3.5 Vitamin C

Both emotional and physical stress may affect a person's Vitamin C status. It can increase requirement for vitamin C to maintain normal blood levels. When stress depletes vitamin C levels in the body, it reduces the body's resistance to infection and disease and increases the likelihood of further stress. When vitamin C intake is increased, the harmful effects of the stress hormones are reduced and the body's ability to cope with the stress response improves. Vitamin C helps the body to recover more quickly. Vitamin C is also believed to be a stress buster and reduces the stress by supporting the adrenal glands and allows a person to bounce back more quickly (Health Botanicals, 2007).

### 3.3.6 Vitamin B

The majority of the B-vitamins function in the development and maintenance of the nervous system. The harmful effects of vitamin-B-deficiencies on the nervous system might increase the risk of developing stress-related symptoms such as irritability, lethargy and depression. They also help maintain regular blood-sugar levels to help keep your energy and mood stable. Among B-vitamins, most important is vitamin B5 (pantothenic acid) which is called anti-stress vitamin. Vitamin B5 helps support the adrenal glands and improves coping mechanisms. Some of the studies show that vitamin B12 may ease the mood changes. Almonds are packed with B and E vitamins, which help boost the immune system, and walnuts and pistachios help lower blood pressure. One of the B vitamins is folic acid which is believed to relieve stress, anxiety, panic and even depression. Folic acid deficiencies have been found to contribute to mental illness. Folic acid is present in kidney beans, whole meal bread, broccoli, brussel sprouts, dark green cabbage, chicory, peanuts, peas, egg yolks and green leafy vegetables. Asparagus is high in B vitamins and folic acid.

Niacin, also referred to as nicotinamide, is not to be confused with nicotine from tobacco. A deficiency of niacin adversely affects tissue respiration and oxidation of glucose and results in the disease known as pellagra in humans. This is characterised by skin and mucous membrane disorders as well as depression and confusion. Pellagra can be cured by feeding niacin or by feeding the essential amino acid tryptophan from which niacin can be made in the body. Good sources of this vitamin are yeast, meat, fish, poultry, peanuts, legumes and whole grain cereals, etc. (Health Botanicals, 2007).

### 3.3.7 Magnesium

Magnesium is needed for a variety of tasks such as muscle relaxation, fatty acid formation, making new cells and heartbeat regulation. Stress and magnesium are said to be interrelated. Both physical and psychological stress may stimulate the stress hormones. This, in turn, increases magnesium loss from the cells (especially from the heart and other vital organs), stimulate urinary excretion and increase dietary requirements for the magnesium (Miller, 2007)

### 3.3.8 Selenium

Selenium is a mineral involved in the reactions which release energy from cells. Its deficiency may cause fatigue. Brazil nuts and also whole grains (if grown in selenium rich soil) are rich in selenium content. Adequate supply of vitamin E increases the effectiveness of selenium. Selenium has an impact on the function of the adrenal glands. Research shows that deficiencies of selenium can have a negative effect on adrenal function (Miller, 2007).

## 3.4 How to Achieve Success in Diet

- i. *Prepare more of your own meals.* Cooking more meals at home can help you take charge of what you are eating and better monitor exactly what goes into your food. You will eat fewer calories and avoid the chemical additives, added sugar, and unhealthy fats of packaged and takeout foods that can leave you feeling tired, bloated, and irritable, and exacerbate symptoms of depression, stress, and anxiety.
- ii. *Make the right changes.* When cutting back on unhealthy foods in your diet, it is important to replace them with healthy alternatives. Replacing dangerous trans-fats with healthy fats (such as switching fried chicken for grilled salmon) will make a positive difference to your health. Switching animal fats for refined carbohydrates, though (such as switching your breakfast bacon for a donut), will not lower your risk for heart disease or improve your mood.
- iii. *Read the labels.* It is important to be aware of what is in your food as manufacturers often hide large amounts of sugar or unhealthy fats in packaged food, even food claiming to be healthy.
- iv. *Focus on how you feel after eating.* This will help foster healthy new habits and tastes. The healthier the food you eat, the better you

will feel after a meal. The more junk food you eat, the more likely you are to feel uncomfortable, nauseous, or drained of energy.

- v. *Drink plenty of water.* Water helps flush our systems of waste products and toxins, yet many of us go through life dehydrated—causing tiredness, low energy, and headaches. It is common to mistake thirst for hunger, so staying well hydrated will also help you make healthier food choices. (Miller, Somarriba & Kunnamon, 2010).

### 3.5 Moderation: Important to any Healthy Diet

What is moderation? In essence, it means eating only as much food as your body needs. You should feel satisfied at the end of a meal, but not stuffed. For many of us, moderation means eating less than we do now. But it does not mean eliminating the foods you love. Eating bacon for breakfast once a week, for example, could be considered moderation if you follow it with a healthy lunch and dinner—but not if you follow it with a box of donuts and a sausage pizza. The following are activities and procedures that help us achieve this:

- i. *Try not to think of certain foods as “off-limits.”* When you ban certain foods, it is natural to want those foods more, and then feel like a failure if you give in to temptation. Start by reducing portion sizes of unhealthy foods and not eating them as often. As you reduce your intake of unhealthy foods, you may find yourself craving them less or thinking of them as only occasional indulgences.
- ii. *Think smaller portions.* Serving sizes have ballooned recently. When dining out, choose a starter instead of an entree, split a dish with a friend, and do not order supersized anything. At home, visual cues can help with portion sizes. You’re serving of meat, fish, or chicken should be the size of a deck of cards and half a cup of mashed potato, rice, or pasta is about the size of a traditional light bulb. By serving your meals on smaller plates or in bowls, you can trick your brain into thinking it is a larger portion. If you do not feel satisfied at the end of a meal, add more leafy greens or round off the meal with fruit
- iii. *Take your time.* It is important to slow down and think about food as nourishment rather than just something to gulp down in between meetings or on the way to pick up the kids. It actually takes a few minutes for your brain to tell your body that it has had enough food, so eat slowly and stop eating before you feel full.

- iv. *Eat with others whenever possible.* Eating alone, especially in front of the TV or computer, often leads to mindless overeating.
- v. *Limit snack foods in the home.* Be careful about the foods you keep at hand. It is more challenging to eat in moderation if you have unhealthy snacks and treats at the ready. Instead, surround yourself with healthy choices and when you are ready to reward yourself with a special treat, go out and get it then.

## 4.0 CONCLUSION

This is a very interesting unit, just like the previous ones. We have taken note of importance of nutrition on stress management, looking specifically as the role of different chemicals and nutrients on the body. We assure you that the information in this course material will be very helpful to you in your studies as well as in everyday life.

## 5.0 SUMMARY

In this unit we saw how nutrition could help us manage stress. This is because eating well will increase your physical, mental, and emotional stamina. Specific topics studied were: importance of balanced diet, important nutrients for stress management, how to achieve success in diet and the need for moderation for healthy diet.

## 6.0 TUTOR-MARKED ASSIGNMENT

Explain the role of the following nutrients on stress management?

- i. Vitamin B
- ii. Vitamin C

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