

Theme 2. Human Health, Nutrition, and Welfare

Attaining full health and high living standards are central aspects for all development efforts. To achieve this, several policies and strategies have been set although there are a lot of multidimensional complexities towards meeting high living standards. Therefore, it is necessary to identify these hurdles in achieving human aspirations. The government of Ethiopia has put health at the forefront of its goals and devised a four-tier health delivery system connecting the health extension and promotion services to highly specialized disease management. Researching on major health issues is also given due emphasis in the country.

This theme focuses on priority areas of health promotion, disease prevention, treatment of diseases, and rehabilitative efforts to human health problems and major reproductive, maternal, and child health concerns. Host, pathogen, and environment interactions in relation to occurrence of health and wellness in one aspect and disease and disability in the other are also dealt with under this theme.

The theme includes the following major sub-themes and research areas:

Sub-theme 2.1. Health Promotion and Disease Prevention

Rationale

In Ethiopia, 85% of illnesses are due to communicable diseases and unsafe living and working conditions. Contaminations of the environment by potentially hazardous pathogenic organisms and chemicals are the causes of the majority of the illnesses. The contaminations are primarily due to improper disposal of human and animal wastes and poor hygienic practices. Contaminants pollute the water people use for drinking and working. This has favoured water-borne diseases.

There are a number of zoonotic diseases that pose risks to human health. These are caused by pathogenic bacteria, viruses, fungi, and parasites. As a result, every year, millions of people are

affected by illnesses. The emerging interdisciplinary field of conservation medicine “One Health System”, which integrates human and veterinary medicine, and environmental sciences, is largely concerned with zoonoses.

With the advent and expansion of industrialisation and agricultural mechanisation and automation, the environment is increasingly contaminated by toxic substances that adversely affect the health of individuals. By providing safe living and working environments, the occurrence of this huge disease toll can be prevented and the health of an individual be promoted.

Aim

The main aim of this sub-theme is to undertake research on health promotion and disease prevention including studies on safe water supply and waste management, control of communicable diseases, housing, and occupational health and safe working condition.

Description

This sub-theme focuses on studies related to identification, development, and provision of safe water supply; management of human and animal wastes; prevention and control of communicable diseases with particular focus on malaria, tuberculosis, diarrhoea, water and airborne diseases, diseases that are transmitted by vectors and large animals; proper housing, illumination, ventilation and diseases associated with improper housing; and occupational health and hygienic practices as well as safe working conditions. The sub-theme also deals with finding ways of protecting workers from potentially hazardous poisonous chemicals and toxic substances.

Expected Output

- Enhanced knowledge on safe water supply and waste management
- Up-to-date knowledge on zoonotic disease management and control

- Enhanced knowledge, skill, and technology to reduce the burden of communicable diseases including diarrheal diseases, TB and malaria
- Better knowledge on proper housing including illumination, and ventilation and disease control as a result of overcrowding
- Better awareness about safe working conditions and behaviours

Potential Collaborators

Federal and regional health offices, WHO, UNICEF, CRDA, wash Ethiopia, environmental protection agency

Research Areas

2.1.1. Safe water supply and effective waste management

This research area encompasses studies on assurance of drinking water quality, enhancing access to potable water, liquid and solid waste management, promoting community sanitation and personal hygiene, addressing water pollution issues, and waste disposal. Emerging contaminants, which include heavy metals, pharmaceuticals, and synthetic organic compounds are also studied under this research area.

2.1.2. Prevention and control of communicable diseases

This research area focuses on epidemiologic, diagnostic, preventive, curative and control strategies of communicable diseases particularly malaria, tuberculosis, and HIV. It also includes other infectious diseases such as diarrheal disease, water-borne diseases, vector-borne diseases, febrile illnesses, chronic infectious diseases, and emerging and re-emerging infectious diseases. This research area also entails linkages between communicable diseases, and personal hygiene and sanitation.

2.1.3. Prevention and control of zoonotic diseases

This research area focuses on public health risks and management of zoonoses and other health threats at the human-animal-ecosystem interface. It also focuses on addressing health promotion, and preventive and curative aspects of zoonotic diseases. Salmonellosis and campylobacteriosis and other zoonotic bacterial diseases including anthrax, brucellosis, infection by pathogenic *Escherichia coli*, leptospirosis, plague, Q-fever, shigellosis and tularaemia will be given a particular focus. Parasitic diseases such as cysticercosis/taeniasis, trematodosis, echinococcosis/ hydatidosis, toxoplasmosis and trichinellosis; viral diseases like rabies, avian influenza, Crimean-Congo haemorrhagic fever, Ebola and Rift Valley fever, and other emerging or re-emerging zoonotic diseases will also be addressed under this research area.

2.1.4. Occupational health, safety, and risk management

This research area focuses on determination of the magnitude of occupational health hazards, awareness and unsystematic use of hazardous chemicals, utilisation of safety measures, and effect of toxic substances on the environment, human, animal, and plant health.

2.1.5. Housing/health problems in residential and institutional environment

The research area deals with the physical structure of housing units, the relation between housing units and physiologic and psychological needs of families/individuals, protection against diseases and injuries, fire and electric hazards, and toxic and explosive gases. It also deals with elements of housing and their effects upon the health of occupants and the incidence of disease and injuries. In addition, policy issues on housing and residential neighbourhood environments are taken into consideration.

2.1.6. Physical fitness and exercises

The research area focuses on sporting and physical fitness activities among different age groups of humans, disease patterns, and nutritional status of individuals. It also deals with the link between sport and immunological responses of the body during health and disease

condition. The influence of sporting and physical fitness activities among the disabled and individuals in debilitated conditions will also be researched.

Beneficiary

Industries, policy makers, and the wider public

Sub-theme 2.2. Advances in Curative and Rehabilitative Health Services and Disease Management

Rationale

Components of health are multiple and their interactions are complex. The health of an individual is strongly influenced by genetic make-up, nutritional status, access to health care, socio-economic status, relationships with family members, participation in community life, personal habits, and lifestyle choices. Good health is fundamental to living a productive life, meeting basic needs, and contributing to community life. It is also an enabling condition for the development of human potential and sustainable growth.

In Ethiopia, though the majority of the health problems are communicable diseases, there is strong evidence supporting epidemiological transition of diseases to chronic and degenerative diseases, cold rather than hot cases, cancer and metabolic disorders, and accidents from machinery and traffic. Other health conditions like eye problems, mental health problems, and disabilities have been on the rise. Yet, these health problems have not been given due attention. As a result, both health facilities and professional are not in place to tackle these alarming epidemics.

Available evidence suggests that there are high rates of changes in disease causing organisms, strains, and a huge burden of drug resistance. On top of this, the skyrocketing prices of the latest effective drugs have exacerbated the persistence of ill-health.

Ethiopian traditional drugs are known among the public for their potency for many diseases. However, there is insufficient knowledge on identification and extraction of active ingredients, and little work has been done to introduce the drugs into the modern therapy.

Aim

The aim of this sub-theme is to carry out research geared towards improving the health and quality of human life with a particular focus on disease management and rehabilitative care. The sub-theme also emphasises on emerging but neglected health problems.

Description

This sub-theme investigates the biopharmaceutical and pharmacological aspects of herbal medicines, development of diagnostics and diagnostic technologies, therapeutics, vaccines and biologicals. It also examines ways to enhance the quality and efficiency of human health care service delivery. In addition, it also focuses on studies related to epidemiological patterns, diagnostic, preventive, curative and control strategies for common cold and emergency cases at paediatric, surgical, medical, and obstetrics/gynaecology cases. It also focuses on chronic and degenerative diseases. This sub-theme also encompasses studies on emerging but neglected non-communicable human health problems.

Expected Output

- New diagnostics, therapeutics, vaccines and biologicals
- Improved service delivery methods and approaches for common human health problems identified, introduced, monitored, and evaluated under clinical settings
- Improved service delivery methods and approaches for emerging but neglected human health problems identified, introduced, monitored, and evaluated under clinical settings

Potential Collaborators

National and international drug factories, patient advocates, vaccine producers, federal and regional health offices, professional associations, multicounty study groups

Research Areas

2.2.1. Development and evaluation of therapeutics, diagnostics, and biologicals

The research area focuses on biopharmaceutical and pharmacological aspects of herbal medicines, development of diagnostics and diagnostic technologies, medical therapeutics, indigenous therapeutic practices, vaccines and biological as well as examining ways to enhance the quality and efficiency of human health care service delivery.

2.2.2. Human health care delivery system for health problems

This research area deals with issues related to improving the quality of care (surgical, medical, paediatric, etc.), pain management, control or prevention of infectious or non-infectious diseases, care for the elderly/health need/long term care, patient education, cancer care, dental health, treatment compliance, comfort measure, palliative care, geriatric care, end of life care, and care for chronic illnesses, method evaluation (diagnostic kits, procedures), tumour marker evaluations in patients with gynaecological cancer, infection intensity evaluation, etc.

The sub-theme also focuses on efficiency and effectiveness of health care delivery systems from the perspective of clients, health professionals, and the system. Productivity, work and professional performance, life expectancy, saving and investment, and debt and expenditure, equity, health-care financing, economic return, and social and political justice in health care are also some of the areas of investigation.

2.2.3. Service delivery methods and approaches for emerging but neglected human health problems

This research area encompasses studies on non-communicable diseases (e.g. diabetic, cardiovascular diseases, cancer, mental illness, asthma, chronic liver diseases, gastric ulcer, renal diseases, restrictive lung diseases, blindness and visual impairment, dermatovenereologic problems and etc.). It also includes studies on common types of injuries and contributing factors, impact of injury and intervention mechanism, home care service awareness, hospice

service awareness, physiotherapy (rehabilitative services), long term care, dental problems and hormonal changes and immunological responses.

Beneficiary

Federal and regional health offices, Industries, policy makers, and the wider public

Sub-theme 2.3. Nutrition, Food Safety and Security, Dietetics, and Nutritional Problems

Rationale

Good nutrition is vital for healthy development of humans. It depends not only on eating enough food, but also on a balanced diet constituting all essential nutrients based on sound knowledge of nutrition.

However, Ethiopia is renowned for problems associated with food and nutritional insecurity. There is a high degree of malnutrition in the country. Both macro and micro nutrient deficiencies are an issue of great concern. Children especially suffer from stunting, wasting and being under-weight. Pregnant and lactating mothers suffer from serious micro nutrient deficiencies. With an increase in urbanisation and family income, obesity is also becoming an issue in urban areas, and diseases associated with obesity are also increasing.

Aim

The main aim of this sub-theme is to conduct research on proper nutrition, malnutrition and determinants of malnutrition, food safety, and diet therapy.

Description

Under this research sub-theme are studied food safety and wholesomeness in its production, storage, preparation, distribution, sale, and consumption. The sub-theme is meant for finding the means to safeguard quality of food from production to consumption. The sub-theme also focuses on food contamination by chemicals, toxins, and pathogenic microorganisms; food safety assurance and sanitary measures; and dietary practices. Under-nutrition, obesity,

overweight and micronutrient deficiencies, and prevention and treatment of malnutrition at all levels are studied under this research area. The sub-theme gives a particular attention to developing effective strategies for nutrition interventions during pregnancy, lactation, early infancy, childhood, and adolescence in both rural and urban areas, and focuses on how best to tackle micronutrient deficiencies.

Potential Collaborators

WHO, UNICEF, FAO, federal and regional health offices, CRDA, Action Aid

Expected Output

- Up-to-date knowledge about nutritional status of the population with particular emphasis on pregnant and lactating women, and children under the age of five
- Better knowledge on balanced nutrition
- Better awareness on food safety
- Identification of highly nutritive food for general and targeted population group
- Enhanced technology on food preparation and serving
- Improved technology on food addition, fortification, and preservation
- Improved technology on food storage and food transfer
- Improved strategy in place for food safety measures
- Enhanced algorithm on food therapy for clients on diet treatment

Research Areas

2.3.1. Proper nutrition and food safety

This research area focuses on studies targeting consumption of proper food and balanced diet throughout the life span. A particular focus will be given to vulnerable population groups such as lactating and pregnant women, children under the age of five, adolescents, and the elderly.

Food preparation, preservation, fortification, and serving are included in this research area. Contaminations of food with chemical and microbial substances and its safety for serving are also the subject of this research area. In addition, identification of edible substances and promotion of its use is also studied under this research area. Furthermore, the research area includes food contamination by toxins, drugs, and biological residues.

2.3.2. Malnutrition and food security

This research area focuses on identifying the nutritional status of population groups and food security at individual, family, regional and national levels. Nutritionally affected population groups will be given a particular focus. Both macro and micro nutrient deficiencies are dealt with under this research area.

2.3.3. Food therapy and dietetics

The research area focuses on food therapy and food preparation in relation to a disease condition of an individual. Food therapy for nutritionally affected groups, particularly children under the age of five and pregnant and lactating women will be given a particular attention. Nutrition palliative therapies in clinical setting for diabetic, hypertensive, and pregnant women will also be studied under this research area. The research area also deals with diet therapy for clients with chronic illnesses like cancer and degenerative diseases.

Beneficiary

Women, children, farming and agro-pastoral communities, industries, the scientific community, policy makers, and the wider community

Sub-theme 2.4. Reproductive Health, Maternal and Child Health

Rationale

The world has set itself the Millennium Development Goals (MDGs) that directly or indirectly address health problems. Although all age groups of a population are at the risk of health and

health-related problems, women and young people are the most vulnerable groups of a population.

Reproductive health is a major concern in Ethiopia. The country has the poorest reproductive, obstetrical, and child health records. Per 100,000 live births, 676 women die of pregnancy and childbirth-related complications. Maternal deaths are related to prolonged labour, obstructed labour, bleeding, unsafe abortion and infection while neonatal sepsis (including pneumonia), prematurity, low birth weight, hypothermia, and hypoglycaemia are the leading causes of child mortality.

Adolescence/youth is a period of transition from a dependent to an independent life. Unless properly guided and handled, this phase of human life is prone to various risks and crises. Reproductive health and STI concerns during this period are immense. School dropouts, lack of jobs and poverty are issues that trigger a number of consequences. Early marriage, substance abuse, teenage pregnancy and motherhood, STI/HIV/AIDS, prostitution, migration, human trafficking, and entering the vicious cycle of poverty are the major consequences of poor handling and guidance of young people.

The disease toll from STI/HIV, opportunistic infections and reproductive cancer is huge. High fertility due to low rate of use of contraceptives and high unmet needs for family planning are the cause of population pressure in the rural setting and unsafe abortion in the urban community.

Aim

This sub-theme focuses on research related to reproductive health, maternal and child health, young people's reproductive health and related issues, and HIV/AIDS problems.

Description

This sub-theme focuses on reproductive health problems such as reproductive and sexual health issues with particular focus on women, children, and young people. The subtheme also researches on sexually transmitted illnesses including HIV/AIDS, substance use/abuse,

unmet need for reproductive health services, and harmful traditional practice on young people, women, and children. Maternal health problems associated with pregnancy and childbirth, nutrition and hygienic practices during pregnancy and lactation are vital thrusts of this sub-theme. Furthermore, research on child health issues including health promotion activities, causes of child morbidity and mortality, ways of creating favourable and productive socio-economic and learning conditions for young people is also a concern of this sub-theme.

Potential Collaborators

Domestic and overseas universities, World Health Organisation (WHO), United Nation Fund for Population Activity (UNFPA), Ministry of Sciences and Technology, Ministry of Women, Children and Youth, Ethiopian Health and Nutrition Institute, HIV/AIDS Prevention and Control Office, Ministry of Health, etc.

Expected Output

- Enhanced knowledge, awareness, and skills to improve proportion of births attended by health personnel
- Increased universal access to reproductive health information and services
- Increased knowledge, skills and technologies and adoption of best practices for reducing maternal mortality, reproductive morbidity/mortality associated with unsafe abortion, female genital mutilation, domestic violence and other harmful traditional practices
- New and enhanced methods of increasing the use of family planning, antenatal care service, skilled delivery, and reduced post-partum complications
- Improved knowledge and skills for decreasing neonatal, infant, and under-five morbidity and mortality
- Increased awareness and technologies for reducing the transmission rate of STI/HIV/AIDS in the population in general and from mother to child in particular
- Enhanced knowledge and means for improving socio-economic, health, and learning conditions for young people

Research Areas

2.4.1. Reproductive and sexual health

This research area focuses on reproductive health problems across the human life span, harmful traditional practices, early marriage and adverse pregnancy outcomes, family planning, risky sexual behaviours and use/abuse of substances, sexual orientations, sexually transmitted illnesses, male reproductive health concerns, infertility and reproductive dysfunction, cancer of reproductive system. It is also concerned with interaction of reproductive and sexual health with population growth and development.

2.4.2. Maternal and child health

This research area focuses on maternal health issues such as skilled delivery attendance, pregnancy related issues, cancer of the cervix, uterus and breast, breast feeding, maternal mortality, determinants and causes. Comprehensive integrated community intervention for safer pregnancy and childbirth are also the subject of this research area. The research area also focuses on neonatal and childhood morbidity and mortality, child growth, and development and schooling and socialisation of the child.

2.4.3. Young people's reproductive health and substance use/abuse

This research area focuses on reproductive health and related concerns of adolescents and the youth. The relation between schooling, employment, and engagement in paid labour activities and reproductive health outcomes will be studied. The research area focuses also on substance use/abuse and the role of peer pressure on reproductive functions and outcomes. Youth/adolescent-centred activities such as clubs, adolescent friendly health/reproductive health services, sporting activities and their role in shaping reproductive health functions will be researched. Physical, psychological, and mental and cognitive consequences of ill-reproductive health are also studied under this research area.

2.4.4. HIV/AIDS

This research area focuses on transmission and prevention mechanisms of HIV/AIDS, vulnerability to HIV/AIDS with particular focus on adolescents, women, and children. The use of substances and alcohol from the perspective of the disease is also investigated. The use of anti-retroviral therapy (ART) and prevention of mother to child transmission (PMTCT) of HIV/AIDS, and the social and economic consequences of the disease and new approaches to tackle it is also be addressed. The research area also focuses on STI (Sexually Transmitted Illnesses) and opportunistic infections.

Beneficiary

The wider public, women, young people, hard-to-reach population, students, long distance truckers, scientific community, government, policy makers, industries, research institutions, etc.