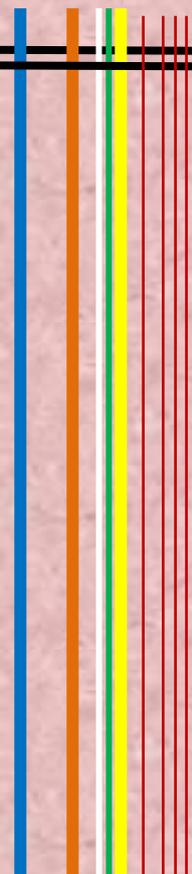


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Health Education

Health education is a profession of educating people about health.^[1] Areas within this profession encompass environmental health, physical health, social health, emotional health, intellectual health, and spiritual health.^[2] It can be defined as the principle by which individuals and groups of people learn to behave in a manner conducive to the promotion, maintenance, or restoration of health. However, as there are multiple definitions of health, there are also multiple definitions of health education. The Joint Committee on Health Education and Promotion Terminology of 2001 defined Health Education as "any combination of planned learning experiences based on sound theories that provide individuals, groups, and communities the opportunity to acquire information and the skills needed to make quality health decisions."^[3] The World Health Organization defined Health Education as "compris[ing] [of] consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health."

The Role of the Health Educator

From the late nineteenth to the mid-twentieth century, the aim of public health was controlling the harm from infectious diseases, which were largely under control by the 1950s. By the mid 1970s it was clear that reducing illness, death, and rising health care costs could best be achieved through a focus on health promotion and disease prevention. At the heart of the new approach was the role of a health educator^[5] A health educator is "a professionally prepared individual who serves in a variety of roles and is specifically trained to use appropriate educational strategies and methods to facilitate the development of policies, procedures, interventions, and systems conducive to the health of individuals, groups, and communities" (Joint Committee on Terminology, 2001, p. 100). In January

1978 the Role Delineation Project was put into place, in order to define the basic roles and responsibilities for the health educator. The result was a Framework for the Development of Competency-Based Curricula for Entry Level Health Educators (NCHEC, 1985).

Health education builds students' knowledge, skills, and positive attitudes about health. Health education teaches about physical, mental, emotional and social health. It motivates students to improve and maintain their health, prevent disease, and reduce risky behaviors.

Health education curricula and instruction help students learn skills they will use to make healthy choices throughout their lifetime. Effective curricula result in positive changes in behavior that lower student risks around:

alcohol, tobacco, and other drugs, injury prevention, mental and emotional health, nutrition, physical activity, prevention of diseases and sexuality and family life.

Health education promotes learning in other subjects! One study showed that reading and math scores of third and fourth grade students who received comprehensive health education were significantly higher than those who did not. In general, healthy students learn better. Numerous studies have shown that healthier students tend to do better in school. They have higher attendance, have better grades, and perform better on tests.

Best practices in Health education provide skills-focused instruction that follows a comprehensive, sequential, culturally appropriate K-12 Health education curriculum that addresses all of the New Hampshire Health Education Minimum Standards.

Address the following in Health education instruction.

Assessing personal vulnerability to health risk-taking;

Accurately assessing health risk-taking of peers;

Analyzing the influence of family, peers, culture, and the media on health behaviors; and
Connecting with others who affirm and reinforce health-promoting norms, beliefs, and behaviors.

Allocate funds and release time to support annual professional development for teachers of Health on the following:

Teaching students with physical, medical, or cognitive disabilities;

Teaching students of various cultural backgrounds;

Teaching students with limited English proficiency;

Using interactive teaching methods, such as role-plays or cooperative group activities;

Teaching essential skills for behavior change and guiding student practice of these skills;

Teaching health-promoting social norms and beliefs;

Classroom management techniques, such as social skills training, environmental modification, conflict resolution and mediation, and behavior management;

Strategies for involving parents, families, and others in student learning;

Assessing students' performance in health education;

Medical updates on health information and health trends.

- Ensure that Health education instruction focuses not only on teaching content knowledge but on teaching skills, including:

Decision-making, Problem-solving, Accessing reliable health information Goal-setting, Communication, Negotiation and refusal, Assertiveness, and Advocacy skills.

- Have one or more than one person who oversees or coordinates Health education.
- Involve parents and families in Health education.
- Make sure that the Health education curriculum is planned, sequential, and developmentally appropriate to better address all of the health instruction outcomes (required content areas).
- Provide health information to parents and families through educational materials sent home and involvement in school-sponsored activities.
- Provide opportunities for Health educators to coordinate instruction with teachers of other subjects and integrate Health into other content areas, particularly Science, Physical Education, and Family & Consumer Sciences.
- Require that the lead Health education teacher in each school have New Hampshire certification in Health education.
- Review and update the curriculum on a regular basis – at most, every five years.

Characteristics of an Effective Health Education Curriculum

Today's state-of-the-art health education curricula reflect the growing body of research that emphasizes

- Teaching functional health information (essential knowledge)
- Shaping personal values and beliefs that support healthy behaviors
- Shaping group norms that value a healthy lifestyle
- Developing the essential health skills necessary to adopt, practice, and maintain health-enhancing behaviors.

Less effective curricula often overemphasize teaching scientific facts and increasing student knowledge.

An effective health education curriculum has the following characteristics, according to reviews of effective programs and curricula and experts in the field of health education:

1. **Focuses on clear health goals and related behavioral outcomes.** An effective curriculum has clear health-related goals and behavioral outcomes that are directly related to these goals. Instructional strategies and learning experiences are directly related to the behavioral outcomes.
2. **Is research-based and theory-driven.** An effective curriculum has instructional strategies and learning experiences built on theoretical approaches (for example, social cognitive theory and social inoculation theory) that have effectively influenced health-related behaviors among youth. The most promising curriculum goes beyond the cognitive level and addresses health determinants, social factors, attitudes, values, norms, and skills that influence specific health-related behaviors.
3. **Addresses individual values, attitudes, and beliefs.** An effective curriculum fosters attitudes, values, and beliefs that support positive health behaviors. It provides instructional strategies and learning experiences that motivate students to critically examine personal perspectives, thoughtfully consider new arguments that support health-promoting attitudes and values, and generate positive perceptions about protective behaviors and negative perceptions about risk behaviors.

4. **Addresses individual and group norms that support health-enhancing behaviors.** An effective curriculum provides instructional strategies and learning experiences to help students accurately assess the level of risk-taking behavior among their peers (for example, how many of their peers use illegal drugs), correct misperceptions of peer and social norms, emphasizes the value of good health, and reinforces health-enhancing attitudes and beliefs.
5. **Focuses on reinforcing protective factors and increasing perceptions of personal risk and harmfulness of engaging in specific unhealthy practices and behaviors.** An effective curriculum provides opportunities for students to validate positive health-promoting beliefs, intentions, and behaviors. It provides opportunities for students to assess their vulnerability to health problems, actual risk of engaging in harmful health behaviors, and exposure to unhealthy situations.
6. **Addresses social pressures and influences.** An effective curriculum provides opportunities for students to analyze personal and social pressures to engage in risky behaviors, such as media influence, peer pressure, and social barriers.
7. **Builds personal competence, social competence, and self efficacy by addressing skills.** An effective curriculum builds essential skills — including communication, refusal, assessing accuracy of information, decision-making, planning and goal-setting, self-control, and self-management — that enable students to build their personal confidence, deal with social pressures, and avoid or reduce risk behaviors.

For each skill, students are guided through a series of developmental steps.

- a. Discussing the importance of the skill, its relevance, and relationship to other learned skills.
 - b. Presenting steps for developing the skill.
 - c. Modeling the skill.
 - d. Practicing and rehearsing the skill using real-life scenarios.
 - e. Providing feedback and reinforcement.
8. **Provides functional health knowledge that is basic, accurate, and directly contributes to health-promoting decisions and behaviors.** An effective curriculum provides accurate, reliable, and credible information for usable purposes so students can assess risk, clarify attitudes and beliefs, correct misperceptions about social norms, identify ways to avoid or minimize risky situations, examine internal and external influences, make

behaviorally relevant decisions, and build personal and social competence. A curriculum that provides information for the sole purpose of improving knowledge of factual information will not change behavior.

9. **Uses strategies designed to personalize information and engage students.** An effective curriculum includes instructional strategies and learning experiences that are student-centered, interactive, and experiential (for example, group discussions, cooperative learning, problem solving, role playing, and peer-led activities). Learning experiences correspond with students' cognitive and emotional development, help them personalize information, and maintain their interest and motivation while accommodating diverse capabilities and learning styles. Instructional strategies and learning experiences include methods for
 - a. Addressing key health-related concepts.
 - b. Encouraging creative expression.
 - c. Sharing personal thoughts, feelings, and opinions.
 - d. Thoughtfully considering new arguments.
 - e. Developing critical thinking skills.

10. **Provides age-appropriate and developmentally-appropriate information, learning strategies, teaching methods, and materials.** An effective curriculum addresses students' needs, interests, concerns, developmental and emotional maturity levels, experiences, and current knowledge and skill levels. Learning is relevant and applicable to students' daily lives. Concepts and skills are covered in a logical sequence.

11. **Incorporates learning strategies, teaching methods, and materials that are culturally inclusive.** An effective curriculum has materials that are free of culturally biased information but includes information, activities, and examples that are inclusive of diverse cultures and lifestyles (such as gender, race, ethnicity, religion, age, physical/mental ability, appearance, and sexual orientation). Strategies promote values, attitudes, and behaviors that acknowledge the cultural diversity of students; optimize relevance to students from multiple cultures in the school community; strengthen students' skills necessary to engage in intercultural interactions; and build on the cultural resources of families and communities.

12. **Provides adequate time for instruction and learning.** An effective curriculum provides enough time to promote understanding of key health concepts and practice skills. Behavior change requires an intensive and sustained effort. A short-term or "one shot"

curriculum, delivered for a few hours at one grade level, is generally insufficient to support the adoption and maintenance of healthy behaviors.

13. **Provides opportunities to reinforce skills and positive health behaviors.** An effective curriculum builds on previously learned concepts and skills and provides opportunities to reinforce health-promoting skills across health topics and grade levels. This can include incorporating more than one practice application of a skill, adding "skill booster" sessions at subsequent grade levels, or integrating skill application opportunities in other academic areas. A curriculum that addresses age-appropriate determinants of behavior across grade levels and reinforces and builds on learning is more likely to achieve longer-lasting results.
14. **Provides opportunities to make positive connections with influential others.** An effective curriculum links students to other influential persons who affirm and reinforce health-promoting norms, attitudes, values, beliefs, and behaviors. Instructional strategies build on protective factors that promote healthy behaviors and enable students to avoid or reduce health risk behaviors by engaging peers, parents, families, and other positive adult role models in student learning.
15. **Includes teacher information and plans for professional development and training that enhance effectiveness of instruction and student learning.** An effective curriculum is implemented by teachers who have a personal interest in promoting positive health behaviors, believe in what they are teaching, are knowledgeable about the curriculum content, and are comfortable and skilled in implementing expected instructional strategies. Ongoing professional development and training is critical for helping teachers implement a new curriculum or implement strategies that require new skills in teaching or assessment.

HYGIENE AND SANITATION

The terms *hygiene* and *sanitation* can mean different things to different people. For the purposes of this document the term 'sanitation' is used to refer to the management of human excreta. The term *hygiene* is used to refer to the behaviours/measures, including but beyond the management of human faeces, which are used to break the chain of infection transmission in the home and community. Whereas most people recognise that hygiene means 'handwashing', there is some confusion as to what else is involved. In reality, all of the following contribute in some measure to reducing the burden of infectious diseases circulating in the community:

- Hand hygiene and personal hygiene;
- Food hygiene (cooking, storing, preventing cross contamination);
- Ensuring safe water at 'point of use';
- Respiratory hygiene;
- Safe disposal of faeces (both human and animal);
- General hygiene (laundry, surfaces, toilets, baths, sinks); and
- Disposal of solid waste, control of wastewater and rainwater

Although ideally all aspects of home hygiene are important, there is a general consensus that hygiene promotion programmes are more likely to be successful in changing behaviour if they focus on a small number of activities at a time. This means understanding how infectious diseases are being transmitted, and prioritising practices which carry the greatest risk.

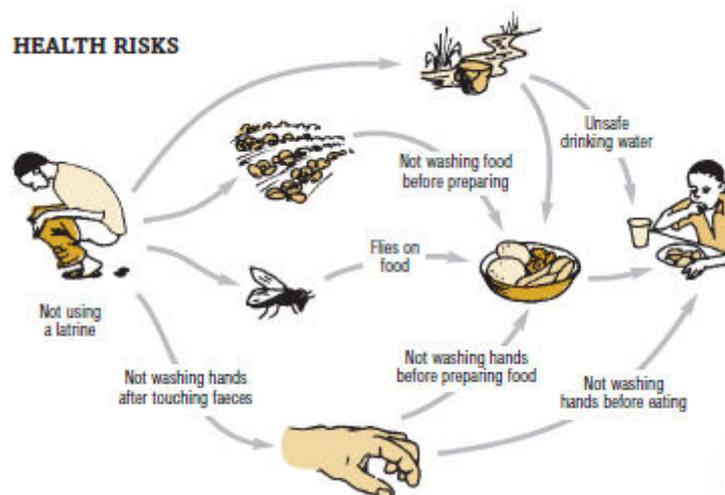
In communities where facilities for safe disposal of faeces are inadequate, the major part of the **diarrhoeal disease** burden originates from infected faeces. Infectious agents are transmitted from faeces to hands to mouth (which can occur directly, or indirectly via other surfaces e.g. toilet surfaces), or by consumption of food or water which has become contaminated with faecal organisms. **'Faecal-oral' transmission is illustrated by the F-diagram shown in the image below.** Breaking the chain of faecal-oral transmission is achieved by a combination of improved sanitation and good hygiene practices. Animal faeces can also be the source of diarrhoeal disease, as can contaminated food purchased from a market or a contaminated community water supply.

Respiratory tract infections such as colds and flu, result either from inhalation of infected mucous droplets, or by rubbing the nasal mucosa or the eye with mucous-contaminated hands. Data now shows that good respiratory hygiene (safe disposal of nasal mucous and handwashing) can reduce the risks of respiratory infections; for instance, a study by Luby et al (2005) showed associations between hand hygiene and Acute Respiratory Infections (ARI) in children under five; when children's hands were washed at the recommended times significant reductions in ARIs were noted. The association between hand hygiene and ARIs is very topical with worldwide concern over the spread of SARS (severe acute respiratory syndrome) in 2003 and more recently Influenza A H1N1 (commonly known as swine flu). The World Health Organization (WHO) has raised the swine flu virus outbreak to a category 6 or global pandemic level (WHO, 2009) and as a consequence national governments are now running health information campaigns in

order to try and limit its spread. These campaigns demonstrate how the association between handwashing and the spread of ARIs is being used to encourage people to change behaviours and follow good hygiene practices; for examples see the British government's 'Catch It, Bin It, Kill It' slogan (UK Government, 2009) and the Information on Influenza A H1N1 displayed on the Ministry of Health and Family Welfare, Government of India (2009) webpage.

For **skin and eye infections**, the hands are probably the major route of spread of infection. Trachoma is largely preventable through hygiene (face washing breaks the infection cycle). Fly control through hygienic latrines is also important.

For **intestinal helminths**, the hands, along with human faeces, are the major route for spreading a variety of intestinal helminths, which, while they do not necessarily contribute to mortality do contribute significantly to morbidity in children under 15 years of age.



Look carefully at this drawing and become familiar with all these seven possible ways in which microbes from faeces can make us ill.

Out of the above infections diarrhoeal disease is the most deadly, especially for children (see Prüss-Üstün et al, 2008) and consequently the WASH sector's primary focus is on reducing its spread. Establishing the relative impact (and thus relative importance) of different interventions is difficult, but it is generally accepted that, for reducing the risks of diarrhoeal disease transmission, priority should be given to **promoting the three interventions** which break the chain of faecal:oral transmission

- Safe disposal of faeces by sanitation;
- Handwashing at critical times; and
- Ensuring access to adequate safe water at point of use.

Other hygiene practices such as **improved food hygiene** and **solid waste management** are important as well; practitioners generally introduce these once the three primary interventions are in place. Of course the ranking of risks may vary from one community to another, for example in some communities risks associated with poor food hygiene may be greater than those associated with poor household water quality.

HYGIENE AND SANITATION

Personal hygiene is the individual concern of every soldier. It is your responsibility to always safeguard your health to remain a combat effective soldier. The rules of hygiene and sanitation are simple and easy to follow

A. Individual Hygiene

The following rules of personal hygiene are basic health guidelines that everyone must observe in order to remain a combat effective soldier.

1. Always keep the body clean. Take a bath once everyday. As a minimum, bathe your feet, hands and private parts. If possible, change your underwear and socks after bathing. When water is scarce, you may bathe at least twice a week. If water availability is worse, at least scrub you body regularly with a clean wet cloth.
2. Change you underclothing daily if possible. If not, at least twice a week. Inspect them for lice, fleas or other bugs that may keep you itchy.
3. Change clothing, shoes or socks immediately after they get wet to avoid getting colds, athlete's foot or other illness.
4. Brush your teeth at least twice a day, preferably after waking up and before going to bed. Brush your teeth on the inside and outside, away from the gums and towards the cutting surfaces of the teeth.
5. Always wash your hands with soap and water before eating, after doing fatigue duty, after engaging in extraneous exercise and after coming out of the head (comfort room).

6. Use only your own eating and drinking utensils if possible. You may contract diseases from infected mess gears or personal article of others. For this same reason, avoid borrowing (and lending your own) towels, socks, shoes, items of uniform etc.
7. When mosquitoes and other flying insects are present in the area, be sure to use a mosquito net. Tuck it well around your bedding and ensure that there are no holes before sleeping. Take your anti-malaria tablets regularly from your medical corpsmen.
8. Never drink water from any untreated source until it has been declared safe for drinking by your medical officer. When purification tablets are available, use them to treat your drinking water. If there are none, you may consider boiling your water for at least ten to fifteen minutes to kil the harmful bacteria that may be present.
9. Relieve yourself on an area which is designated as the head area for your unit. Ensure that your head area is always secured against enemy harassment.
10. Exercise your muscles and joints regularly. Inactivity may do equal damage to your health as extreme exertion or fatigue.
11. Avoid venereal diseases. Do not associate with infected women who may be carriers of these diseases. When in doubt, take necessary precautions. If your think you have caught any of these sexually transmitted disease can be cured much easier and quickly on its early stage. Untreated venereal disease may result to death or permanent damage to your body.

B. Camp Sanitation

Camp Sanitation - refers to the rules of cleanliness that should be followed for the general upkeep and maintenance of military camps for healthful living. Here are some important rules of camp sanitation that you should follow:

1. When putting up camps and bivouacs, build them around a sanitary plan. Make provisions for the health and sanitation requirements of the occupying unit, such as the location of the galley (kitchen), the head (toilet) and the billeting areas of the men.
2. Avoid clustering troop living quarters in confined and limited areas in order to attain proper ventilation and to prevent spread of diseases. Properly plan out the efficient use of all available living spaces in your camp or bivouac area.

3. Control the camp's water supply. Purify drinking water in a manner approved by the Medical Officer. When your water source is a stream or a river, mark separate water points for washing, cooking and human consumption. Washing and bathing points must always be located further downstream from points designated for human consumption. In cases of camps established in the combat areas, always remember to get water only from sources that are positively secured from enemy harassment.

4. Locate and construct heads and urinals away from the galley, mess hall and potable water source, but not too far from the living areas. As much as possible heads and urinals should be situated downwind of above mentioned areas. When situation allows, a straddle type trench may be constructed easily. The trench should be dug one foot wide, two and a half feet deep and four feet long or longer depending on the number of men who will use it. The earth removed in digging may be piled at the end of the trench with a can or shovel so that each man can cover his waster with soil after using the trench. Before abandoning the camp, fill all straddle type trenches and when located within a training area, mark the site with the date when it was closed. A field urinal may also similarly be constructed.

5. Maintain the sanitary condition in the galley. Food must be stored in clean receptacles. Garbage, leftovers, and other food waste must be disposed of only at designated garbage dumping areas or pits, where they may be covered with soil or burned. Improperly disposed and uncovered garbage, become the breeding grounds of insects such as flies and cockroaches, which feed on them pick up the germs and later transfer them to your food.

6. Carry our a continuous extermination campaign against flies, mosquitoes, lice, ticks, cockroaches and rats. The simplest way to control the increase of these pests is to cut off their source of nourishment by screening heads, galleys, and mess halls and by disposing of your food wastes properly. You must also drain or put oil on stagnant pools of water in old tire exteriors and drainage canals to kill the larvae of insects. Bury empty rations cans, and turn split coconut husks upside down to prevent insects and rats to feed or breed in them.

C. Field Duty

Field duty is an unavoidable assignment in the military and what you make of your tour of duty in the operational area largely depends on you. Thus, an experienced soldier of positive mental attitude and creativity can make his stay in the field relatively comfortable and pleasant, which otherwise may seem miserable to others. Here are some practical tips

on how to make your field assignment a welcomed experience and how you can maintain your physical and mental health during your field tour.

1. **KEEP CLEAN.** Whenever practical and when field schedules allow, wash, shave and have your haircut regularly. There is indeed truth to the saying "Look good and you will feel good." And certainly you will also "think good" and "do good" if your look and feel like a good and disciplined soldier. You can use empty containers to fetch and store water. If you do not have any water basin, you can construct a simple washstand with your helmet securely mounted on an ammo box. You may also keep a small mirror and a bottle of your favorite after-shave with your other toilet articles. Also keep a face towel which you can wet and rub your body clean and freshen you up.

2. **KEEP DRY.** Erect your tent or whatever shelters you has built for your self properly. Whenever possible, always dig a ditch around your tent to avoid being flooded out inside the shelter during heavy rain. A flooded shelter just like a leak, can kill anights sleep and make you feel very miserable. At every opportunity, find time to improve on your shelter and keep yourself dry and comfortable by making use of your imagination and available indigenous materials.

3. **KEEP WARM.** When the weather is cold and damp, you can keep yourself warm by putting on additional insulation materials between your sleeping mat and the ground. You can make use of dried grass or leaves, canvass, newspapers or cardboard, topped with your poncho before you lay down with your sleeping mat. You may even consider making a sleeping deck out of discarded boards of empty ammo boxes, which you may lay, side by side on the ground. You may then place a wooden plank at the foot of your makeshift bunk as a footing to keep your feet out of dirt.

4. **SLEEP SOFT AND COMFORTABLY.** Prepare your bed before dark. Select a level spot free from rocks and roots. You may consider hollowing out a hip-hole or make a body fitting depression about three inches deep. Where you expect your hips will be when you lie down. You may also make use of your pack or any bundled up clothing materials as a pillow.

5. **BEAT THE INSECTS.** Always use your mosquito net and take good care of it in order to prevent holes or rips. A mosquito net with holes is a mosquito trap with you as the live bait. When issued a mosquito hood, use it when you have to be out in the dark, as when you are

posted as a sentinel. If none is available, rub all your exposed body parts with an effective insect repellent.

6. TAKE CARE OF YOUR FEET. Always wear only properly fitted socks and shoes. Also find time to regularly wash your feet and to trim your toe nails. Always keep them dry and change your socks regularly to avoid having athlete's foot and other diseases. Also keep a pair of comfortable beach sandals which you may use when wearing of combat boots is not required or when you go to the head or when taking a bath. Relieve your feet of unnecessary discomfort.

SPREAD

Illnesses caused by germs and worms in feces are a constant source of discomfort for millions of people. These illnesses can cause many years of sickness and can lead to other health problems such as dehydration, anemia, and malnutrition. Severe sanitation-related illnesses like cholera can spread rapidly, bringing sudden death to many people.

HOW GERMS SPREAD DISEASES

Many illnesses are spread from person to person by germs. Germs are tiny living things that cause sickness. Sometimes it is easy to know where germs are – in feces, rotting foods, and other dirty places. But sometimes, germs are in places that look and smell clean. Germs can pass directly from person to person through touch, and sometimes through the air with dust or when people cough or sneeze. They can spread through food and drinking water. Or they can be carried by flies and animals. Germs that cause diarrhea travel on these paths.

What could have prevented the family's illness?

The spread of illness could have been prevented.

- If the man had used a toilet.
- If the pig was kept in a fenced area.
- If the child had washed his hands, rather than used his mother's skirt.
- If the mother had not touched her soiled skirt and then touched the food.
- If the mother had washed her hands with soap and water.

Bladder and kidney infections

Infections of the bladder and kidney are caused by germs. These infections are much more common in women than in men because germs can easily get into the body through the urinary opening near the vagina. Infections of the urinary system can be mild or severe and even life-threatening.

Causes of bladder infections

Germs can enter the urinary opening and cause infection when a woman:

goes a long time without urinating. Try to urinate every 3 or 4 hours.

goes a long time without drinking liquids. Try to drink at least 8 glasses or cups of clean water a day. Drink even more when working in the hot sun.

does not keep her genitals clean. Try to wash the genitals every day, and always wipe from front to back after using the toilet.

has sex. This is one of the most common causes of bladder infection in women. To prevent infection, urinate after having sex. This washes the germs that cause bladder infections out of the urine tube.

Signs and treatment

Signs of bladder or urinary tract infection include:

Need to urinate often and urgently

Pain in the lower belly just after urinating

Burning feeling when urinating

Urinating without control

Reddish or cloudy urine

Foul-smelling urine

If you have signs of a bladder infection, start drinking plenty of water to help flush out germs. If a bladder infection goes untreated, it can worsen and infect your kidneys. If the signs last more than 2 days, you may need medicines.

Signs of kidney infection include:

Any bladder infection signs

Pain in the lower back

Fever and chills

Nausea and vomiting

Diarrhea

Feeling very weak and ill

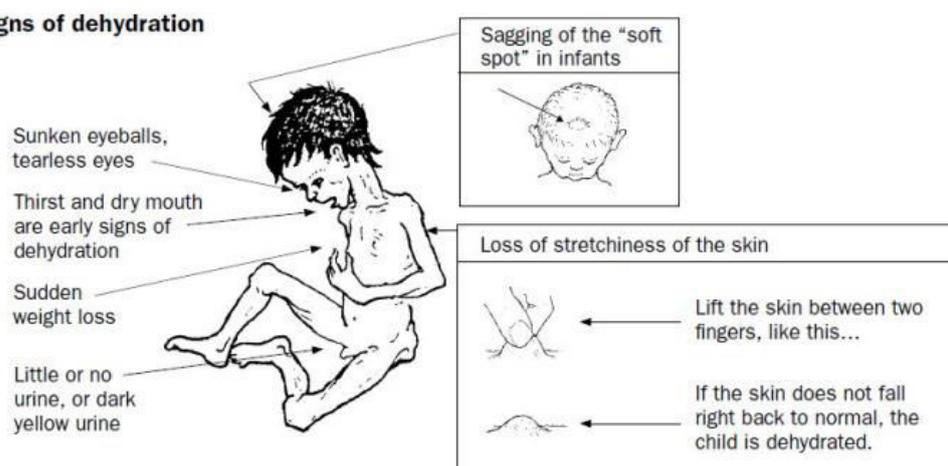
Kidney infections are more serious than bladder infections because the kidney can get so sick that it stops working. In a kidney infection, a kidney infection often needs more treatment. If you have the signs of a kidney infection, see a doctor.

Diarrhea and dehydration

Many people die from diarrhea diseases, especially children. These diseases are often caused when germs grow in the food. If you do not have enough water left in their bodies. This lack of water is called dehydration. People of any age can become dehydrated, but it is more dangerous for them.

Any child with watery diarrhea is in danger of dehydration.

Signs of dehydration



Note for the health worker

To teach the signs of dehydration, you can use a "body mapping" activity. Bring parents together and show them a picture of a healthy baby. Have them point or draw arrows to where they would see signs of dehydration. Discuss all the signs. Then discuss the ways they can help their children when these signs appear - and what they can do to prevent dehydration and diarrhea in the first place.

To stop dehydration

When a child has watery diarrhea or diarrhea and vomiting, do not wait for signs of dehydration. Act quickly.

Give lots of liquids to drink, such as a thin cereal porridge or gruel, soup, water, or rehydration drink (see below).

Keep giving food. As soon as the sick child (or adult) can eat food, give frequent feedings of foods he likes. To babies, keep giving breast milk often – and before other drinks.

Rehydration drink helps to prevent or to treat dehydration. It does not cure diarrhea, but may give enough time for the diarrhea to cure itself.

IMPORTANCE OF HYGIENE

Access to improved water and sanitation facilities does not, on its own, necessarily lead to improved health. There is now very clear evidence showing the importance of hygienic behaviour, in particular hand-washing with soap at critical times: after defecating and before eating or preparing food. Hand-washing with soap can significantly reduce the incidence of diarrhoea, which is the second leading cause of death amongst children under five years old. In fact, recent studies suggest that regular hand-washing with soap at critical times can reduce the number of diarrhoea bouts by almost 50 per cent.

Good hand-washing practices have also been shown to reduce the incidence of other diseases, notably pneumonia, trachoma, scabies, skin and eye infections and diarrhoea-related diseases like cholera and dysentery. The promotion of hand-washing with soap is also a key strategy for controlling the spread of Avian Influenza (bird flu).

The key to increasing the practice of hand-washing with soap is to promote behavioural change through motivation, information and education. There are a variety of ways to do this including high-profile national media campaigns, peer-to-peer education techniques, hygiene lessons for children in schools and the encouragement of children to demonstrate good hygiene to their families and communities.

One of the best ways to prevent diarrhea diseases is to wash hands **after** defecating or handling babies' feces, and **before** preparing food, feeding children, or eating. Keeping a source of clean water near your home will make hand-washing much easier. But washing with water alone is not enough. To make hand-washing effective, use soap to remove dirt and germs. If no soap is available, use sand, soil, or ashes. Rub hands together well with soap and flowing water like that from a pump, faucet, or tippy-tap. Count to 30 as you scrub your hands all over. Then rub hands together under the water to rinse off soap, sand, or ashes. Dry with a clean cloth or let your hands dry in the air.

A lack of sanitation and hygiene contributes to a range of health and environmental problems. The resulting sickness causes suffering, and loss of opportunities to earn a living or gain an education.

No sanitation means open defecation

India has the highest rate of open defecation in the world (*WHO-UNICEF, 2010*). People who have their own land have space to practise open defecation. The poorest people, however, who own little or no land, often have to walk for miles each day to access relatively safe and private open space. At the very least, this is a huge waste of time, effort and human potential. For the more vulnerable members of communities (women, pregnant women, children, and sick, elderly, or disabled, people) fulfilling their basic human needs can be a dangerous and degrading ordeal. Defecation near water sources and where food is being grown can spread disease.

We support projects to encourage whole communities to build toilets in every household and improve their hygiene practices.

No sanitation means life is worse for girls

Lack of sanitation facilities in schools is a major factor in girls not attending school. We have supported a number of projects providing sanitation facilities and hygiene education in schools.

Investing in children school sanitation and hygiene education has many benefits for example:

- Promotes effective learning.
- Increases enrolment of girls.
- Reduces incidences of disease and worm infections.
- Promotes environmental cleanliness.

UNICEF's long standing support for improving water supply, sanitation and hygiene stems from a firm conviction and based on sound evidence that these are central to ensuring the rights of children.

In fact, it is essential for children to survive, grow and develop into healthy and fulfilled citizens of the world. In the broader context, UNICEF's activities in Water, Sanitation and Hygiene (WASH) contribute to the achievement of the Millennium Development Goals.

Fast Facts

Hand washing with soap, particularly after contact with excreta, can reduce diarrhoeal diseases by over 40 per cent and respiratory infections by 30 per cent.

Diarrhoea and respiratory infections are the number one cause for child deaths in India.

Hand washing with soap is among the most effective and inexpensive ways to prevent diarrhoeal diseases and pneumonia.

With 594 million people defecating in the open and 44 per cent mothers disposing their children's faeces in the open, there is a very high risk of microbial contamination (bacteria, viruses, amoeba) of water which causes diarrhoea in children.

Children weakened by frequent diarrhoea episodes are more vulnerable to malnutrition and opportunistic infections such as pneumonia. About 48 per cent of children in India are suffering from some degree of malnutrition. Diarrhoea and worm infection are two major health conditions that affect school age children impacting their learning abilities.

Adequate, well-maintained water supply and sanitation facilities in schools encourage children to attend school regularly and help them achieve their educational goals. Inadequate water supply and sanitation in schools are health hazards and affect school attendance, retention and educational performance.

Adolescent girls are especially vulnerable to dropping out, as many are reluctant to continue their schooling because toilet facilities are not private, not safe or simply not available

Women and girls face shame and a loss of personal dignity and safety risk if there is no toilet at home. They have to wait for the night to relieve themselves to avoid being seen by others.

Sanitation

It is estimated that

- Only 31 per cent of India's population use improved sanitation (2008)
- In rural India 21 per cent use improved sanitation facilities (2008)
- One Hundred Forty Five million people in rural India gained access to improved sanitation between 1990-2008
- Two hundred and Eleven Million people gained access to improved sanitation in whole of India between 1990-2008
- India is home to 594 million people defecating in the open; over 50 per cent of the population.
- In Bangladesh and Brazil, only seven per cent of the population defecate in the open. In China, only four per cent of the population defecate in the open.

Water

- 88 per cent of the population of 1.2 billion has access to drinking water from improved sources in 2008, as compared to 68 per cent in 1990.
- Only a quarter the total population in India has drinking water on their premise.
- Women, who have to collect the drinking water, are vulnerable to a number of unsafe practices. Only 13 per cent of adult males collect water.
- Sixty seven per cent of Indian households do not treat their drinking water, even though it could be chemically or bacterially contaminated.

Hygiene

- According to the Public Health Association, only 53 per cent of the population wash hands with soap after defecation, 38 per cent wash hands with soap before eating and only 30 per cent wash hands with soap before preparing food.
- Only 11 per cent of the Indian rural families dispose child stools safely. 80 per cent children's stools are left in the open or thrown into the garbage.
- Only 6 per cent of rural children less than five years of age use toilets.
- WASH Interventions significantly reduce diarrhoeal morbidity; statistically it has been shown that:
 - Handwashing with soap reduces it by 44 per cent
 - Household water treatment by 39 per cent
 - Sanitation by 36 per cent
 - Water supply by 23 per cent

- Source water treatment by 11 per cent.

Factors that influence health

“To think that the world did not follow the law of causation would be to take the phenomena of the Universe from the domain of Law & Order and to relegate it to the control of the imaginary.” – The Kybalion

One of the primary concerns with current conventional health care is the assumption, often unstated, that disease is random and illogical and that physiological symptoms are the cause of disease.

This irrational belief separates man from his life, decreases self-responsibility and self-awareness.

It eliminates the need to look for and to address causal factors and places the emphasis of the conventional health-care system on labelling disease versus understanding disease.

Health and disease are logical, complex and multi-factorial. The causal factors of disease are never another symptom or condition

The Factors That Influence Health and Disease.

Personal Essence

Lifestyle

Social

Environmental

External

Treatments

Gestational and Developmental Factors

Progression of Disease

PERSONAL ESSENCE

The personal essence is a descriptive concept of an individual's vital or life force. Vital force is considered the primary force of all forces. It is the divine creative intelligence.

Concepts

When the personal essence is strong and in harmony with the individual there is health. Imbalance, lack of harmony or coherence in the personal essence is a precursor (even an actual cause) of subsequent disease. The task for each person is to learn how to live a life that is aligned with the personal essence and learn 'the language of the body' as it manifests signs and symptoms of imbalance indicating a need for change.^[1]

- *The Journal of Alternative and Complementary Medicine* declared that subtle energy or the invisible 'life force' is as much taken for granted as a fundamental fact of healing by alternative therapies as it is dismissed outright by the orthodox scientific world.^[2]
- The personal essence permeates the psychological, the functional and the structural aspects. It relates to our vital force, our sense of purpose, our spirituality and our connection with the collective consciousness. It provides a person with a sense of belonging to something that is greater than the self. The personal essence acts as a guide and a filter on a person's life. It holds a person's deep core beliefs and their values. It is their blueprint.^[1] The personal essence is influenced throughout a person's life based on the stages of life and the events that a person has encountered. It reflects a persons:

- overall vitality
- beliefs and expectations
- sense of purpose
- a sense of belonging to something that is greater than itself
- a guide and filter on person's life
- a person's core values

LIFE STYLE

If all people understood how to use water one-half of all the afflictions from disease would be removed. The other half would be taken care of by understanding how and when to eat, how to breathe and the necessity of daily exercise. Louisa Lust (1868-1925) .

Lifestyle factors are those behaviours and daily choices that provide the fuel and structure for the body to function. They ensure that the terrain of the body, that is the internal environment, has the nutrients and ingredients to sustain health and to aid healing and repair.

Lifestyle factors are the aspects of health promotion, the healthy lifestyle habits, which influence all stages of life and all stages of health and disease. They include.

- water
- nutrition
- hygiene
- posture
- rest
- sleep
- movement
- expression of emotions
- positive mental outlook

WATER

Water is the primary chemical component of life. 3/4 of the earth's surface is covered with water and human beings are about 65%. Water is fundamental to all life on earth and is one of the key determinants to health. A lack of water results in dehydration.

Every one of the body's tissues and organs, as well as every one of the body's sustaining processes, such as thinking, nerve function, blood circulation, digestion, locomotion and elimination, requires water in order to function properly. The lack of water is a common contributing factor to disease. Drinking it and using it as a therapeutic tool are essential to healing.

Properties of Water

The diverse properties of water provide insight into why it is so versatile and essential to life.

Composition

Water is composed of two part hydrogen and one part oxygen. $H_2O = H - O - H$

Neutral Component

The water molecule is electrically neutral. It contains both positive and negative charges, yet the positive and negative charges are not distributed uniformly. This makes a hydrogen atom always available to "stick" to another element in order to balance its energy. Water plays an essential role in maintaining the acid-alkaline balance within the body. Whenever this balance is disrupted chemical reactions within the body are disrupted resulting in symptoms or the development of disease. The optimal pH level of water is about 6.5-6.8 which is slightly acidic (the pH range is 1-14, with 7 being neutral). If water is too acidic or too alkaline, this can upset the normal pH level of your body.

Versatile

Water is the only substance that is found as a gas, liquid, and solid in the normal temperature ranges found on the Earth's surface. The concept of a hydrologic cycle explains the circulation of water from the oceans to the atmosphere to the land and back giving us a renewable supply of fresh water and air. The water molecule is in permanent motion and is perpetually exchanging energy with whatever it comes in contact with.

Universal Solvent: Water can dissolve more substances than any other liquid – that's why it is essential not only for many metabolic functions, but also for life on earth. As water circulates it dissolves rocks, minerals and all organic materials, providing the salts and oxygen to all living bodies. Water is the primary means by which chemicals, hormones and nutrients are dissolved and transported throughout the body.

Redox Potential

Redox potential (rH₂) indicates whether the water has the capacity to provide electrons to the body. Available electrons in water provide energy to the body by way of cellular respiration and an oxygen-dependent process known as the Krebs cycle. The body needs electrons to make necessary chemical reactions happen. While electrons also come from food, it is essential the water we drink provides energy-rich electrons to help replenish and maintain the high proportion of water our body needs.

Resistivity

Resistivity (r) is a measure of the mineral content of water. Ideally, water will have a resistivity of at least 6,000 ohms, which indicates a fairly low mineral content. Minerals from water are poorly absorbed compared to those found in foods. Water with a high mineral content can put undue stress on kidneys and other organs and tissues in the body.

Buoyancy

Water gets denser as it cools (like most things) but only down to 4° C (39.2° F) and then its density decreases as the temperature continues to go down and it freezes . That is why ice floats on water. Imagine what would happen with sea life without this feature.

Heat Capacity: Heat capacity is the ability to gain or lose heat without changing form (go from solid to liquid or liquid to gas). Water has the highest heat capacity of all common liquids and the highest latent heat capacity of any common substance. Latent heat capacity is determined by the amount of extra energy you have to put into a liquid to change its state from solid – liquid – gas. This water property makes it an effective coolant for the human

body via evaporation or perspiration, extending the range of temperatures in which humans can exist.

Importance

Every system in the body depends on water. When you're born you are about 90% water, as an adult that percentage can drop to about 60%. The average water content of different parts of the body is as follows: lungs 90%, blood 82%, brain 76%, muscles 75% and bones 25%. There is a correlation between the onset of disease and the amount of water within the body.

Moistens tissues Water provides a moist environment for all mucous membranes including the ear, mouth, nose and throat. It lubricates joints and is the base for saliva and all bodily fluids. The tone and texture of skin is often reflective of the water level in the body.

Protects organs and tissues Every single living cell is made up of water (intracellular fluid) and is surrounded by water (extra cellular fluid). Water acts to cushion and support organs and tissues.

Increases overall energy The chemical properties of water make it the primary energizer of all functions in the body. It produces hydroelectric energy at the level of cell membranes, particularly in the nervous system and in muscles. Water transfers its hydrolytic energy to elements as they are broken down so that the body can use them. Water is also the adhesive that bonds cell membranes. Therefore, it plays an all-encompassing role in energy metabolism and the physiologic functions of the body.

Cellular transmission Water breaks down all elements to their primary constituents for absorption into the system for further use, for example, proteins to amino acids, starch to sugar, and fats to fatty acids. Water dissolves minerals and other nutrients to make them accessible for transport to every cell in the body.

Maintenance of body fluids Water is essential in maintaining the balance of fluids in the body and for ensuring the proper acid alkaline balance.

Cellular communication Thoughts, emotions, nervous system transmission thought to be transmitted by water making it the primary mode of cellular communication.

Regulation of body temperature The heat capacity of water controls the regulation of body temperature through perspiration and by evaporation.

Elimination of toxins There are six main routes of elimination including urine, bowels, sweat, breath and menses. Water is the primary constituent of them all. Water is also responsible for flushing out and dissolving toxins and waste products.

Influences

How Much Water Do You Require?

Every day you lose water through your breath, perspiration, urine, bowel movements and from other physiological functions. For your body to function properly, you must replenish its water supply by consuming adequate water and foods which are high in water. Adequate hydration reduces the likelihood of overeating and improves the function and health of human beings. The amount of adequate water depends on many factors including body composition, age, activity level, health status and the season. In general, you want to drink enough fluid so that you rarely feel thirsty and so you produce colourless or slightly yellow urine a day. Here are the most common ways of calculating that amount.

½ Body Weight in Ounces For a regularly active adult the general guideline is to drink ½ your body weight in ounces a day. For example, if you weigh 150 pounds you would plan to drink about 75 ounces or roughly 8 glasses of water a day.

Replacement approach In general the total water that you require is equal to the amount that you lose plus the amount that the body requires for ongoing metabolic functions. You expel between 2 to 4 cups of water each day simply by normal breathing. This amount increases in cold weather or with increased activity. You also lose about 1 cup of water each time you urinate. Other losses of water including sweating – including the skin and feet and bowel movements. Factors such as increased activity level, hot weather, diarrhea or vomiting and food choices impact the requirement for water.

Your need for water will also fluctuate based on your specific symptoms and diseases. If you're unsure about your fluid intake, check with your naturopathic doctor. They will help you determine the amount of water that's best for you.

Children Fluid requirements in children are based on body weight according to the Holliday-Segar method. Fluid requirements are better estimated by weight than age, to take into account the possibility of an underweight or overweight child. It is important to note fluid requirements are higher with increased losses (i.e. fever, diarrhea, vomiting, sweating, etc.). Fluid restrictions may be required in some medical cases and those children should be

carefully monitored by their physician. It is important, however, to maximize fluid intake within this restriction.

Tip: Bored with plain water – add lemon or lime to the water. Be careful with flavoured water as the addition of “flavour” can modify the chemical structure and properties of water. They also typically add calories, which pure water does not.

When is it best to drink water?

Starting your day with a large glass of water before any other food or drink is a wonderful habit. Throughout the night toxins accumulate in the body and drinking water assists in flushing them out of the body.

Always drink water before, during and after any prolonged or excessive exercise or if you are outside in the heat – whether just relaxing and enjoying the sun or working.

Throughout the day plan to drink about 1 glass of water an hour. Stop ½ hour before meals and resume about 1 hour after meals.

The notion of drinking water while eating is NOT advised for most people. Water dilutes the hydrochloric acid in the stomach thus decreasing the stomachs ability to breakdown food. Some people choose to drink water before a meal or with a meal as it fills up the stomach and decreases appetite. Although this is a common practice for those looking at reducing their weight, it is not advised. Water is essential to health yet, it has no calories or nutrients. Using water in this way is a contributing factor to rebound weight gain and can disrupt health on many levels.

Factors that Influence Requirements

Food Choices. Substances such as alcohol, coffee and sugar are dehydrating and result in an increased need for water. Meals that are high in meat or that are dry may also require additional water for proper digestion and metabolism. Keep in mind that drinking water is best done away from eating as water can decrease the needed hydrochloric acid of the stomach and decrease the body’s ability to break down food.

Exercise. If you exercise or engage in any activity that makes you sweat, you need to drink extra water to compensate for the fluid loss. An extra 400 to 600 milliliters (about 1.5 to 2.5 cups) of water should suffice for short bouts of exercise, but intense exercise lasting more than an hour (for example, running a marathon) requires more fluid intake, typically

with added electrolytes. How much additional fluid you need depends on how much you sweat during exercise, and the duration and type of exercise. Also, continue to replace fluids after you're finished exercising. Sports drinks are a common choice, but keep in mind that there are other alternatives that have fewer chemicals and food additives. Also, if you choose to use sports drinks, recognize that they were created for those involved in intense exercise, they are not meant to be consumed on a daily basis under regular activity, by young children or by those that have high blood pressure and other health concerns.

Environment Hot or humid weather can make you sweat and requires additional intake of fluid. Heated indoor air also can cause your skin to lose moisture during wintertime. Further, altitudes greater than 8,200 feet (2,500 meters) may trigger increased urination and more rapid breathing, which use up more of your fluid reserves.

Illnesses or health conditions When you have fever, vomiting or diarrhea, your body loses additional fluids. In these cases, you need to drink more water. With vomiting and diarrhea it is often necessary to consume food or drink that contain salt in order to replace the loss of electrolytes. Also, you may need increased fluid intake if you develop certain conditions, including bladder infections or urinary tract stones. On the other hand, some conditions such as heart failure and some types of kidney, liver and adrenal diseases may impair excretion of water and even require that you limit your fluid intake. Check out the section on Diseases Associated with Dehydration for more information.

Pregnancy or breast-feeding Women who are expecting or breast-feeding need additional fluids to stay hydrated. Large amounts of fluid are used especially when nursing. The Institute of Medicine recommends that pregnant women drink 2.3 liters (about 10 cups) of fluids daily and women who breast-feed consume 3.1 liters (about 13 cups) of fluids a day.

NUTRITION

Classifications of Food

There are a number of different ways that food is classified. Each way represents a specific philosophy or approach to health. The quality of food is a growing concern, mainly due to food adulteration and contamination issues, the impact of herbicides and pesticides and genetically modified food. The quality of food is often discussed based on whether or not food is processed or whole food and whether or not it is organic or local and seasonal.

Traditional

In traditional systems of medicine food was often looked at based on its properties, such as hot or cold and dry or moist. Specific foods were chosen based on their ability to balance the body. This look at food is often referred to as the energetic properties of food.

Food Groupings

Eating a healthy diet involves consuming a balance of fruits, vegetables, grains, eggs, legumes, nuts and seeds, fish and meat and fats and oils on a daily basis. As part of a health diet it is often beneficial to monitor your consumption of dairy, sugar and salt.

Nutrient Composition

The nutrient composition of food looks at food from a biochemical perspective and explores the main components in food such as Carbohydrates, Protein, Fats or Lipids, Dietary Fiber, Water, Vitamins, Minerals and Enzymes. Nutrients in food are either considered macronutrients or micronutrients depending on the quantity in which they are consumed.

Non-Nutrient Components

Over time the study of food has expanded to include those non-nutrient components that are added to food during processing such as food additives, food flavourings and food colourings.^[3] These additives may provide flavour, colour and texture to food, but they also contribute to various symptoms and diseases.

Sugar and sugar-based products are often considered a non-nutrient component of food.

Characteristics

Looking at food based on its characteristics is based partly on the principles of the energetics of food. It includes:

- **Plant family.** Many foods are also considered herbs, spices or medicinal plants, for example onion, garlic, thyme, oregano etc.
- **Food Properties.** The main food properties include: sweet, sour, salty, spicy and bitter.
- **Colour.** The colour of fruits and vegetables indicated the different vitamins and minerals that they contain.
- **Texture.**

- **Temperature.**

Food and Organs

Food benefits specific organs depending on the properties of the food.

- SPICY foods benefit the LUNGS.
- SWEET(in moderation) and WARM foods benefit the SPLEEN.
- SALTY foods benefit the KIDNEYS.
- EXCESS COLD/ COOL foods can damage the SPLEEN.
- SOUR foods benefit the LIVER.
- EXCESS HOT foods can create a heat condition.
- BITTER foods benefit the HEART.

HYGIENE

The term "hygiene" is derived from the name Hygeia, the Greek goddess of health, cleanliness and sanitation. ^[1] The hygiene movement began in the 1830s by dedicated practitioners who rejected orthodox medicines and believed that with hygiene the spread of infectious disease could be prevented.

Hygiene refers to the science that deals with the promotion and preservation of health. ^[2] The principles of hygiene are to prevent the spread of disease, thus promoting health. There are various divisions of hygiene yet they all have the same goal which is to prevent the spread of disease. Hygiene should not be confused with cleanliness. As hygiene is to prevent disease spread, cleaning techniques are often involved in this process. Cleaning techniques such as hand washing and antiseptic sprays are methods used to promote hygienic practices.

Types of Hygiene

- **Medical hygiene** Medical hygiene refers to the practice and standards used in medical settings to prevent the spread of infectious disease. Some of the practices include quarantining individuals infected with disease, sanitization of all medical instruments, wearing gloves, gowns, masks, and other protective barriers, the use of biohazard waste bins and disinfecting reusable gowns and linens.
- **Home and daily life hygiene** Home and everyday life hygiene is the practice of hygiene in the home setting. Disease can be spread from food, domestic animals, water and between individuals. The goal of home hygiene is to break the spread of transmission.

Some of the methods used in home hygiene include:

- **Hand hygiene** refers to the use of disinfectant and antibacterial soaps or sanitizers to prevent the spread of microbes from contaminated hands. Most important times to wash hands include: after going to the washroom, after touching foods (particularly raw foods), before eating, after handling domestic animals, after wiping or blowing nose and after contact with any contaminated surface.
- **Respiratory hygiene** refers to correct sneezing and coughing practices to prevent disease transmission. Coughing or sneezing into your sleeve prevents contaminating the hands, thus minimizing spread of infection. Washing hands immediately after blowing nose, coughing or sneezing also helps prevent spread of disease.
- **Food hygiene** is essential to prevent food poisoning. Proper food hygiene refers to cooking food to appropriate cooking times, separating raw and cooked foods and storing food at appropriate temperature for appropriate amount of time.
- **Household water treatment and safe storage** are practices that can be used by individuals in the home to ensure safe drinking water. Using a carbon filter, boiling water, solar disinfection are methods that can be used to prevent the spread of disease.
- **Hygiene in the kitchen, bathroom and toilet** proper cleaning of the bathroom and kitchen can prevent spread of disease. As these areas can become moist, moulds can easily grow. Ensuring adequate scrubbing can prevent the growth of moulds and spread of disease. Proper cleaning of contact areas such as kitchen cupboard handles, toilet seat, toilet flush handle and bath tub floor can prevent the spread of microorganisms.
- **Laundry hygiene** prevents the spread of micro-organisms between linens and contaminated clothing. Fabrics that come into direct contact with the individual can carry various organisms that need to be eliminated in the laundry in order to prevent spread of disease. Washing clothing at 60°C water kills most pathogens. Washing clothing at 30-40°C with bleach is also effective at eradicating pathogens. For a more environmentally sound way to do laundry, increase the temperature of the laundry cycles before considering the use of bleach.
- **Body hygiene** Body hygiene refers to the care of an individual's body in order to promote health and well-being. Body hygiene has become customary for social acceptance in the western world. Body hygiene practices include: teeth brushing, flossing, showering, use of shampoos, deodorants, skin cleansers, use of toilet paper etc.
- **Culinary hygiene** Culinary hygiene refers to the practice of food hygiene in the food industry. The set of practices are stricter than are necessary in a home setting given the

mass amount of food production and potential for the spread of disease. Some of the methods employed include labelling foods with an expiry or best before date, never reusing a utensil without proper sterilization once contaminated, using different utensil for each individual food prepared, using bleaches and various disinfectants to prevent the spread of disease.

- **Personal service hygiene** Personal service hygiene refers to the set of practices required by various service providers. Services include: aesthetics services, piercing and tattoo, hairdressers etc.

Hygiene Hypothesis

The hygiene hypothesis was first proposed in 1989 by David Strachan, who noticed a decrease in allergic rhinitis (runny nose due to allergies) in individuals who were born into big families.^[3]

The theory suggests that a decrease in exposure to microorganism early in life increases the risk of allergic conditions and auto-immunity. Historically, individuals lived on farms, were born into large families, attended day-care setting and had domestic pets which increased the body's exposure to microorganisms. Hygiene practices were also not what they are today exposing an individual to numerous pathogenic agents, which in turn challenged and strengthened their immune system. Today, with individuals living in urban setting and the rise in body hygiene and hygienic techniques such as antibacterial products, disinfectants and sterilization techniques the body is not exposed to as many microorganisms as it once was. This decrease in exposure has not allowed immune systems to develop optimally given rise to an increase in auto-immune conditions, asthma, allergies and eczema. Decreasing exposure to certain known pathogens through hygienic practices has helped prevent the spread of disease, however over sanitization have been suggested to increase the number of allergic conditions in the young.

Importance

- **Prevents spread of disease** Since the implication of hygiene practice there has been a large decrease in the spread of infectious disease. This has helped decreased the incidence of illness in developed countries. It is essential to follow hygienic practices in order to prevent unnecessary illness within our society.
- **Clean food** Following culinary hygienic practices within the food industry is essential to help prevent the spread of disease through food. This has greatly decreased the incidence of food poisoning and outbreaks within our society. Hygienic food practices

should also be practiced at home in order to prevent the spread of disease within the household. Without hygienic practices in the food industry and at home there would be a large incidence of infectious organisms spread leading to sickness with our society.

- **Clean Water** Bacterium and viruses can spread very easily in the water. Ensuring that communities have proper water filtration plants and follow guidelines for hygienic practices, there can be a decrease in the spread of infectious agents. Without proper hygienic practices in the water system there would be unnecessary spread of various bacteria leading to potentially life threatening illness.

Impact

- **Can You Be Too Hygienic** Although hygiene is essential in today's world to prevent the spread of disease, as a society it has been taken too far. The use of antibacterial agents has created a more sterile environment which, in itself, has contributed to health concerns. The spread of infectious agents has decreased, yet the incidence of allergic and auto-immune conditions seems to be on the rise. A balance between hygienic practices and exposure to a normal amount of bacteria is essential to a healthy immune system. Conditions associated with over-sterilization include:
- **Allergies and asthma** with hygienic practices there has been a decrease in microorganisms' exposure in young children. This is thought to contribute to the increase number of allergies and asthma among school aged children. Exposure to microorganisms early in life allows the immune system the opportunity to correctly identify harmful pathogenic agents from benign agents. When the immune system is not awarded the opportunity to discern bacteria it can become hypersensitive to very benign agents. Hypersensitivity can lead to asthma, allergic rhinitis (runny nose), itchy watery eyes etc.
- **Auto-immune diseases** in the western world auto-immune conditions are on the rise. This seems to be due to a lack of exposure to certain known 'good' bacteria early in life. The exposure to these bacteria has decreased substantially given a link to the cause of auto-immune conditions.

Treatments

In order to prevent the disease associated with over-sterilization and sanitization it is essential to follow a few guidelines.

- Choose natural products whenever possible: choose natural deodorants, toothpastes, shampoos, conditions, creams etc. that do not rid the body of its natural oils and natural

protective barriers. This will allow the body the opportunity to create a natural amount of healthy oils at a regular rate. Using chemically based products will wipe the body of its natural oils forcing one to shower, shampoo, cleanse more than necessary. This will lead to over drying of the skin and hair. Naturally based shampoos will allow one to wash their hair 1 to 2 times a week which is the naturally required amount, instead of the average, which is every day.

- Avoid the use of antibacterial agents: Antibacterial agents should be used when there has been a known exposure to harmful bacteria. Such as, using antibacterial cleanser following the handling of raw chicken. The use of antibacterial agents at all times creates over sanitization which does not allow the immune system to work optimally, potentially leading to disease.

POSTURE

Posture is the “alignment of body parts in relation to one another at any given moment.”^[1] Posture requires the interaction between bones, muscles, connective tissue, joints and neurons. In addition to contributing to overall wellness, posture is a form of communication that reveals a person’s degree of confidence and self-esteem. Poor posture is a contributing factor to many symptoms and diseases. The most notable consequence is pain and discomfort, but it is also a factor in degenerative and chronic diseases.

Importance

Neutral Posture. In order to sustain good posture – referred to as neutral posture – the muscles of the body must be in balance to support an aligned spine. Neutral spine, does not equate to a flat spine, as there are many natural curvatures to the vertebral column. The neck, known as the cervical spine, has a natural anterior curve or lordosis which is necessary to balance the cranium. The thoracic spine, or trunk, has an opposite orientation. It curves posteriorly which is known as a kyphotic curve. The lumbar spine follows the same angle of the cervical spine, curving anteriorly, creating a second lordotic curve in the spine. These natural curves give the spine a slight ‘S’ shape when viewed from the side. In a neutral spine, there is balance between the musculature right-to-left and front-to-back. When in a neutral posture, the body is in its strongest and most balanced allowing for optimal efficiency and minimal stress on the joints and the rest of the body. Maintaining a neutral spine is a dynamic process that is meant to transition from position to position.

Neutral posture is essential for optimal wellbeing and functioning of the body.

- **Holding the weight of the body** The most important function of a neutral posture is to maintain the body in an upright position, supporting the body against gravity.^[2] If there is dysfunction in the alignment, excess stress and weight is put on muscles and joints which can lead to a significant amount of pain and discomfort.
- **Breathing** The diaphragm, the primary muscle responsible for breathing, is attached to the ribs, spine and hip flexor muscle.^[3] Weakness in the abdominal muscles causes a faulty posture, typically excessive lordosis, and inevitably impact the ability to perform maximal expiration.^[4] Rounded shoulders interfere with the ability to straighten the upper back and prevent maximal thoracic expansion interfering with breathing capacity.
- **Musculoskeletal balance** Good posture refers to a body in muscular and skeletal balance where each joint is bearing an appropriate load and each muscle is working at its appropriate capacity. As one muscle group fires there is always a counteracting muscle that works, these are known as agonist and antagonist muscles. Antagonist and agonist need to work synergistically to maintain balance and good posture. Poor posture leads to muscular imbalances where there is persistent use of certain muscles without adequate exercise of the opposing muscles. This leads to over stretching of one muscle and excessive tightening or shortening of another. Over time if posture is not corrected the muscles adapt and begin to take on their new length. This distorts the spine and joints and results in decreased range of motion, pain and discomfort.
- **Internal functions** Posture contributes greatly to an individual's shape. Each organ of the body has its natural position and place in the body that is, to a large degree, maintained by posture. Physiological and organ function depend greatly on a neutral posture. The tension and efficiency of the diaphragm's movement is a good indication of overall posture. While in a neutral posture, the diaphragm is able to move optimally compressing the abdominal content during inspiration and recoiling during expiration. When the diaphragm is moving efficiently and the spine is neutral, the internal organs are in their optimal location, allowing for proper functioning. When posture is out of balance it creates distortions of the spine. These distortions can change the position of the internal organs, cramping the lungs, stomach and intestines which can lead to shallow breathing, faulty digestion, poor elimination and constipation.^[5]
- **Concentration, memory and cognitive ability** Many mental functions, including concentration, memory and cognitive ability depend on the flow of blood and energy from the body's core to the brain. Any misalignment in posture, especially as it relates to the neck and head, can impact blood and energy flow and hence function.
- **Flow of energy throughout the body** In traditional Chinese medicine (TCM), the body is viewed as unique systems and meridians which allow the free flow of Qi. Qi, is the

body's life force that helps keep balance and movement within the body. When energy is free flowing through the meridians there is no pain and the body can function optimally.^[6] Free flow of energy is best achieved when the body has a neutral spine. Blockages or stagnation as described in TCM, are a result of the obstruction of the flow of Qi and results in pain.

Influences

Due to the delicate balance that must occur between our skeletal and muscular system in order to maintain a neutral posture, there are inevitably many variables that trigger postural dysfunction. Below are some of the most common factors:

Sitting Good alignment is essential while sitting especially since most individuals spend a minimum of 8 hours a day sitting. Maintaining proper alignment can alleviate a significant amount of postural discomfort.

- Good seated posture begins with a proper chair. Chair height should allow the feet to be rested comfortably on the floor. Hips and knees should incline about 10 degrees and be at a 90 degree angle relative to the back of the chair. Arm rests should allow the arms to rest comfortably along the side of the body. Arm rests that are too high create extra strain in the neck regions.
- Some of the most common faulty postures while sitting include: leaning too far forward in a chair creating excessive lordosis of the lumbar spine and sitting in a slumped position due to lack of lumbar support creating a faulty head and neck position.^[4]
- When sitting for a long period of time the knees and hips are in a flexed position. It is important to get up and walk around to allow extension of these joints on a frequent basis.

Standing Standing impacts posture to varying degrees.

- In a neutral standing position, the chin is lifted and the head centred over the shoulder. Chest is lifted and hips neutral. The feet are slightly wider than hip width apart, knees slightly bent and feet stable on the floor with your body weight equallon both feet.

- If a significant amount of time is spent standing, postural muscles can fatigue leading to faulty alignment. Lack of body awareness can also lead to improper posture while standing.
- Commonly, the lumbar curve becomes exaggerated subsequently leading to changes in the thoracic spine. By being aware of standing position, one can alleviate a significant amount of postural dysfunctions.
- If standing for long periods of time, it is ideal to shift your body weight from one leg to the other.

Carrying a Load Carrying a backpack, purse or briefcase puts additional stress on the spine and can alter posture and can increase postural sway. A carrying load should not exceed 10% of an individual's body weight and needs to be carried in the right location.

- In order to avoid stress on the spine, a backpack should be carried high in the thoracic region of the back.^[7] When a backpack is carried near the low back, the upper spine is forced into flexion leading to postural dysfunction.
- Carrying a purse or single strap briefcase leads to a change in the body's centre of pressure which affects neutral control of posture. Oversized bags and purses can also put a lot of stress in the neck, back and shoulders.

Nutrition The structure and alignment of the body, especially in children, is dependent on proper nutrition.

- Diets high in acidic foods cause the body to leach calcium from the bones to help buffer the acidic environment in the body. This leads to decreased strength and mineralization of the bones over time leading to a weakened skeletal system. Peak bone mineral density is achieved in childhood and early adulthood and begins to decline in the mid to late twenties. Ensuring a diet high in alkalizing foods will help protect optimal bone development and ensure optimal bone density.
- Diets low in alkalizing foods inhibits the body's ability to neutralize an acidic environment. In order to balance an acid/alkaline environment the diet should be rich in alkalizing fruits and vegetables.
- Nutrient deficiencies: a deficiency in vitamin D can cause adverse effects to our skeletal system. Vitamin D is essential to absorption of calcium in the body.

Clothes Clothing can have a big impact on postural alignment.

- Large belts can hinder breathing capacity. Tight and restricting clothing alter posture by restricting the body's normal movements.

- Clothing influences body alignment and posture due to somatosensory feedback. The nervous system receives information from the skin and attempts to maintain posture based on this and other information received from various other systems in the body. Certain clothing, notably low rise jeans can cause a variation in somatosensory information resulting in subsequent postural adaptations.^[9]

Shoes The feet are the body's base of support and proper alignment of the spine begins with ensuring good shoes sizing and support.

- High heels can cause a significant change in posture. Heels change the distribution of body weight shifting it forward.^[4] The foot is forced into plantarflexion (toe down position) shifting body weight to the ball of the foot. The amount of weight directed to the forefoot is directly related to the height of the heel.^[4] Changing the weight distribution over the feet causes the rest of the body to compensate in order to maintain balance. By changing the body's weight distribution you alter the shock absorbing qualities of the S-curves in the spine. This alteration in shock absorption puts additional stress on the musculature leading to pain and discomfort over time.
- Proper shoe sizing is also essential to good posture. Shoes that are too large have been linked to a significant increase in ankle pain.^[10] Shoes that are too small can cause foot pain, can impact alignment and development of the toes and the feet.

Accidents and Injuries Accidents and injuries can result in acute or chronic musculoskeletal pain and discomfort. This forces the body to find compensatory ways of functioning in order to avoid pain. Faulty posture and abnormal spinal curves and can increase your risk of suffering in an accident or injury.^[11]

- Whiplash, a common injury following a motor vehicle accident can greatly affect posture. Whiplash injuries usually occur following a hit from behind, but can occur in any car accident. In such an injury, the neck is forcefully thrown into hyperextension, followed immediately by hyperflexion of the neck, leading to mild to severe discomfort and pain.^[4] The 'hyper' movements of the cervical spine cause the muscles and ligaments to stretch leading to faulty alignment. In addition to the direct musculoskeletal changes, researchers have found that whiplash injuries can cause distortion of the posture control system directly affecting posture.^[12]
- An injury to the ankle forces an individual to bear most of their weight on the good foot to avoid the discomfort associated with putting weight on the injured part. This prolonged change in position greatly impacts posture.

Sleeping: Individuals spend a third of their lives sleeping, yet do not practice good ergonomics during this time. Good sleep posture keeps the spine in its natural alignment

and contributes to a neutral posture upon rising. In order to maintain a healthy sleep posture, it is important to

- Have a firm mattress that does not allow the spine to deviate or the hips to sink into the mattress
- The head should remain neutral in relation to the neck.
- In a side lying position, it is helpful to place a pillow between the knees to avoid rotation at the lumbar spine.
- When sleeping supine (on the back) it is helpful to keep a pillow under the knees to maintain the natural S-curve of the spine.

Computer work Most individuals spend a large portion of their day sitting at a computer. Improper position can lead to neck aches, headaches, frozen shoulder and frustration.^[13]

- Computer work puts a significant amount of stress in the neck and shoulder and contribute to a rounded shoulder position, collapsing the anterior chest.
- While typing the wrists should be neutral or slightly flexed downward and the shoulders back in a neutral position.

Psychological factors (i.e. self esteem) Several psychological factors affect posture. To maintain good posture it is essential to nourish the mind, as our mind, body and spirit all directly influence each other.

- Self-esteem and confidence are typically portrayed in good posture with someone holding their head high.^[15]
- A common sight when observing children is the young child who grows quickly and develops rounded shoulders. This can be associated with low self-esteem or a lack of confidence about their size or stature.
- Mood plays a role in posture, when feeling well and in good spirits, one typically maintains better posture; if feeling overwhelmed, sad or stressed the shoulders round forward creating a faulty posture.

Excess weight The spine is designed to absorb forces and distribute weight. When carrying excess weight, the spine is required to handle more load than it is designed for, resulting in compensatory actions.

- Excess abdominal weight creates an exaggerated lordosis or curve in the lumbar spine which distorts its natural alignment.
- If the abdominal muscles are weak and cannot compensate for this change in position, it leads to further postural dysfunction.

- As proper alignment of the pelvis and lower spine are essential for proper alignment of the mid and upper back, this faulty positioning can lead to further complications in other segments of the spine. Keeping a healthy weight will not only allow one to live a long active life, it is essential for a neutral posture and balanced spine.

Age Postural changes occur as the body ages. It is also impacted throughout life due to the choices that we make and the situations that we encounter.

- **Children.** The developing child has much greater mobility and flexibility than the adult leading to slightly different postural alignment including:^[4]
 - Flat feet until the age of 6 or 7 when the bones of the foot, as well as ligaments and muscles are more mature.
 - Hyperextension of the knees is typically due to the increased mobility and flexibility of the supporting ligamentous structures.
 - Knock knees is commonly seen as children begin to walk and should disappear with time.
 - In infancy, there is imbalance between the anterior and posterior muscles of the trunk and back which allows the infant to lift their head.
 - Children tend to have a protruding abdomen. At around 10 to 12 years of age the waistline becomes relatively smaller and the abdomen no longer protrudes.
 - Young children often stand with their feet far apart to maintain balance and have a slight bend at the hips.
 - Early school aged children typically show a weakness in the upper back with the shoulder blades being quite prominent.
 - At around 9 years of age there is a tendency for an increased lumbar curve, or lordosis.

- **Older Adults.** The factors that impact older adults include:^[1]
 - Aging is a dynamic interaction between environmental factors and biological systems and with that are associated postural changes.
 - As aging occurs, one of the most noted postural transformations is an increase in thoracic kyphosis which forces the line of gravity to shift. This can cause changes in balance and create difficulties in shifting weight, such as when rising from a chair.
 - A more pronounced forward head position, accentuated thoracic curve and a loss of the normal lumbar lordosis.

Diseases Degenerative joint disease, osteoporosis, bone spurs, or osteophytes, can all cause postural changes.

Discomfort and pain are often one of the first signs of poor posture. Discomfort is a result of additional stress on muscle, ligaments, joints and cartilage. Pain is often the result of poor posture that eventually causes anatomical changes potentially causing constriction of blood vessels and nerves.^[16]

- **Low back pain** occurs when the spine and associated muscles can no longer support the postural misalignment. Herniation of a disc occurs when the gelatinous inner structure of the lumbar disc bulge out beyond its normal limit. If the herniation is significant enough it can lead to sciatica, an achy or shooting pain down the leg due to compression of the nerve root.
- **Neck pain** Prolonged forward head position puts additional stress on the joints, ligaments and musculature of the neck.
- **Trigger point** A trigger point, or knot in a muscle, develops when there is constant demand on a muscle causing the muscle to work harder, or if there has been an injury to the muscle.^[17]
- **Headaches** Improper alignment can cause impingements within the spine, compressing blood flow to the brain, resulting in pain. Headaches can also be a result of active trigger points in the neck muscles forward head position contributing to faulty neck alignment.^[18]
- **TMJ** One of the main causes and focus for treatment for TMJ (temporomandibular joint) is posture.
- **Plantar Fasciitis** Improper foot posture (forefoot pronated), standing for long periods of time with incorrect arch support, or placing your weight on the balls of your feet when sitting all put stress on the ligamentous structure of the bottom of the foot eventually leading to pain.
- **Bone spurs** cause pain and discomfort causing the elderly person to change their normal postural alignment or can physically prevent normal range of motion within a joint.
- **Degenerative joint disease** occurs due to the excess strain on the joints. Improper wear on joints due to poor posture causing increased breakdown of cartilage and joint tissue. Ensuring a neutral posture puts minimal stress on the joints and in turn minimal breakdown.
- **Osteoporosis** contributes to postural changes. Compression fractures are common with osteoporosis and typically result in a wedging of two of the thoracic vertebrae

creating the excessive thoracic kyphosis. Osteoporosis also leads to collapsing of vertebral bodies. This results in a decrease in disc space and a decrease in height.

- **Respiratory problems** are often associated with rounded shoulders and forward flexion of the upper body. Over time this leads to shortening and tightening of that anterior chest wall muscles and the diaphragm making breathing more difficult.

Assessing Posture

A thorough assessment of posture involves evaluating the alignment of the body, flexibility and muscle length and muscle strength.

Ideal alignment:

The following is an overview of ideal alignment.^[4]

Head and neck the ideal position for the head and neck is one in which the head is well balanced and supported with a minimal amount of muscular effort. From the side view plumb line, the line should intersect through the ear canal and there should be a slight anterior curvature to the cervical spine. The head position should not be too far anterior or turned up or down.

Upper back alignment of the upper back is maintained by the lumbar spine and the pelvis and should have a minimal curve in the posterior direction. If there is excessive lordosis of the lumbar spine, the thoracic spine compensates and takes on a more flat back appearance straightening out the thoracic spine.

Chest the chest position should be up and slightly forward. This is somewhere between full inspiration and forced expiration.

Abdomen In adults the abdomen should be flat, however in children younger than 10 years old it is normal for the abdomen to protrude slightly.

Shoulders and arms In a neutral posture the scapulas should lie flat on the back between the 2nd and 7th thoracic vertebrae and the scapulas should sit approximately 4 inches apart. When examining from the side view plumb line, the line should intersect the middle of the shoulder joint, or glenohumeral joint. The arms should lie beside the trunk with a slight bend in the elbow and palms facing the body.

Pelvis and low back a neutral pelvis occurs when there is balance between each anterior superior iliac spine, which is the bony projections on the front of the hips. These two bony projections should be in the same horizontal plane and be pointing forward. When there is

a neutral pelvis there is a natural lordotic curve and neutral lumbar spine. When looking at the side view plumb line, the line should intersect the centre of the acetabulum (hip socket). Using solely the side view does not give sufficient information about the position of the pelvis as it can shift side to side. Therefore it is important to note the level of the anterior superior iliac spine in a horizontal plane as well.

Hips and Knees When evaluating these joints from the side view the line should pass slightly posterior to the centre of the hip joint and slightly anterior to the centre of the patella. There should be even weight distribution between left and right side and knee caps should point anteriorly.

Ankles in side view, the plumb line should intersect slightly anterior to the lateral malleolus, the large bone at the side of the ankle. In a neutral position when the knee is straight, the ankle is held at 10 degrees of dorsiflexion (decreasing the angle between the top of the foot and the shin). This angle is greatly decreased when heel height is altered through footwear.

Feet and toes In a neutral position the feet should be separated approximately 3 inches and the feet turning outward about 8 degrees from each other and toes straight.

Flexibility and muscle length

There are several tests performed to determine flexibility and muscle length all of which provide indications of postural dysfunction.

Forward bending: is routinely used to evaluate the length and flexibility of the hamstrings, back and calf muscles. This can be done from a standing position or seating position. The number of inches reached past the toes or before the toes is noted.

Arm overhead elevation individuals are asked to extend their arms overhead to note if any muscular limitation exists. The results are noted bilaterally.

Hip Flexors Hip flexors length is measured by having an individual lie on their back on an examination table, hug one knee to their chest and extend the other leg off the table. Shortened hip flexors will not allow the extended knee to drop.

Trunk extension is the movement of backward bending and is done from a standing position. Knees should remain straight and extension should be from the lumbar spine. In muscular imbalances an individual will compensate and bend their knees to try to extend.

Trunk lateral flexion standing straight an individual is asked to extend as far to one side as possible (usually asked to keep arms at the side and extend one hand as far down the leg as possible). This test indicates limitations in trunk mobility.

Muscle strength

The third component of a postural assessment is testing muscle strength. Dysfunctions in posture can cause altered muscle strength. The abdominal muscles are integral to proper posture. A thorough evaluation of the upper, lower and oblique abdominals is essential. As well as, evaluation of the lateral trunk flexors, back extensors, middle and lower trapezius muscles, serratus anterior, gluteus medius, gluteus maximus, hamstrings, hip flexors, soleus and toe flexors is all part of a thorough postural assessment.^[4]

Treatments

Always start by identifying and addressing the factors that are contributing to the postural misalignment. In general, there are several approaches used to help correct faulty posture. Awareness, behavioural changes and movement are fundamental to restore a neutral alignment.

Awareness it is essential to get a thorough postural assessment to determine your specific postural misalignments. Becoming aware of posture throughout the day is the first step in helping to correct misalignment. By understanding proper alignment and noting where you may be making deviations from such is fundamental to restoring a neutral spine.

Behavioural modifications once you are aware of your posture you can begin to make behavioural modifications to help optimize a neutral spine. Proper ergonomics should be practiced in all positions throughout the day. Some of the most common contributors to poor posture include poor ergonomics at a computer station, faulty sitting position and improper alignment while standing.

Movement and exercise a personalized exercise program is important to help rebalance postural muscles. Understanding your body's own areas of weakness can help facilitate the re-development of a neutral spine. Stretching tight muscle and strengthening weak muscles is important for rebalancing the spine. Although, exercise is important to help retrain muscles, they are only preformed for a limited part of the day. Awareness of your posture is fundamental to establishing good posture and good health.

Please see your Naturopathic Doctor for a thorough health and postural assessment to help facilitate the body's own healing and wellness.

REST

Rest is the cessation of activity which allows us to recharge and rejuvenate ourselves. It can be either mental, physical, or both, and is essential for our overall well-being and functioning. In today's fast-paced society, we seldom find time to relax and take a break, allowing it to affect our quality of life.

Types of Rest

Many people associate resting with sleeping, but there is a definite difference. Although both terms refer to a state of inactivity, the main difference is that sleep requires one to be in a restful state first, while rest does not require one to be sleeping.^[1] Rest can be classified into 4 main categories:^[2]

Sensory rest: This refers to the state of giving your senses a rest from the experiences of the physical world. For example, closing your eyes for 1-2 minutes after sitting in front of a computer for long hours.

Emotional rest: This type of rest is often confused with mental rest. Emotional rest refers to the state of denying oneself to be overwhelmed with the feelings of others and creating a space or balance.

Mental rest: This involves stopping the mind from thinking by creating space between one thought to another, without overlapping them.

Physical rest: This type of rest involves relaxation of the entire body.

Importance of Rest

Rest has many benefits including:

- **Memory:** Sleep is important in processing and committing new information to memory through a process known as memory consolidation.
- **Metabolism:** Chronic sleep deprivation can lead to weight gain by affecting the way our bodies store carbohydrates and altering levels of hormones that affect our appetite.
- **Mood:** Sleep is important to overall well-being and mood. Sleep deprivation can often cause irritability, impatience, inability to concentrate, and moodiness.

- **Cardiovascular health:** Certain sleep disorders have been found to be linked to cardiovascular health causing hypertension, increased stress hormone levels, and irregular heartbeat
- **Disease:** Sleep deprivation affects the body's immune function.

Recommendations

The following tips may be useful in helping to incorporate rest in your daily life. ^[4]

- **Make time for rest:** As with important appointments or meetings, make some time in your day to relax and take a break from your busy schedule. This may be especially helpful when you feel stressed or over-burdened.
- **Follow a routine:** This helps with transitioning from one part of the day to another and can help ensure that you set aside some time, even as short as 5 minutes, to properly unwind and rest before beginning a new task.
- **Give your mind a break:** Rest does not only involve physical relaxation, but mental as well. Mental exertion can also affect your body's ability to cope or keep up and can cause you to feel overwhelmed and physically exhausted.

SLEEP

Sleep is a natural state of rest for the mind and body. A third of life is spent sleeping, yet it is often taken for granted or abused. Sleep is essential to physical, cognitive and emotional well being. As sleep is perceived as lacking importance in our society, sleep difficulties are rapidly becoming more prevalent. Insomnia is defined as difficulty in initiating or maintaining sleep for an adequate amount of time. It is estimated that 3.3 million Canadians a year, or about 1 in every 7th persons, have trouble going to sleep or staying asleep. ^[1]

Stages Of Sleep

During the day the brain is firing at a rapid rate – known as beta waves – keeping one alert, allowing one to think and to be aware of their surroundings. Normal sleep is characterized by alternating between light, deeper slow-wave sleep (NREM) and REM sleep. Each sleep cycle is roughly 90 minutes, allowing an individual to move through 4 to 6 cycles in a given night. During the first cycle the least amount of time is spent in REM sleep and the most time in stages 3 and 4 of NREM sleep. Throughout the night, as the cycles continue, there is an increase in the amount of time in REM sleep and a decrease in the amount in NREM. During 7.5 hours of sleep you will spend about 25% in REM sleep.

Rapid eye movement or REM sleep is the period of sleep that the eyes flutter back and forth and vivid dreams are experienced. During this stage the brain is highly active and muscles are temporarily paralyzed. Researchers believe this is to protect an individual from acting out their dreams. This stage is characterized by alpha and beta brain waves, bringing the brain close to a wakeful state. Respiration rate, heart rate and blood pressure all fluctuate during this time in response to dreams. Women may experience clitoral engorgement and men may experience penile erection as part of the autonomic nervous system activation. It is easier to arouse someone from REM sleep than from stage 3 or 4 of NREM sleep.

NREM Stage 1 - Stage 1 of NREM begins when the brain waves slow and one begins to relax. This stage is known as a state of transition when an individual slips into the beginning of sleep. One may notice physical changes as they relax: brain activity decreases, heart rate and blood pressure drop, muscles become relaxed, breathing slows and body temperature drops. This stage is characterized by theta brain waves and lasts for 5 to 10 minutes.

REM Stage 2 - In stage 2 of NREM, the brain waves slow even more. This is still a stage of moderately light sleep and it is fairly easy to arouse someone. However, during this stage the body has committed to sleep rather than just dozing. Healthy adults typically spend about 50% of their time in stage 2.

NREM Stage 3 and 4 - Stages 3 and 4 are often grouped together, because, from a physiological point of view, they are relatively similar. During stages 3 and 4 the senses and mind are completely cut off from the external environment. The brain waves have switched to a delta brain wave activity. If a person were to be aroused from this stage, it would be quite difficult to wake them. If they do wake up, they would awaken feeling groggy and disoriented.^[2] Stage 4 is the stage of deepest sleep, followed by stage 3. It is during stage 4 that growth hormone is secreted and the body begins to repair itself. The immune system also works hard during this stage. This is why, when falling ill, a good night's rest helps one to feel better. On the other hand, when lacking sleep, the body is not awarded the opportunity to repair and is unable to ensure optimal immune function. During sleep deprivation the body craves delta sleep and will do its best to get one to stages 3 and 4 in a hurry. This is noticed when someone falls asleep quickly and it is very difficult to wake them. Their body has pushed them to a deep sleep quickly to make up for a lack of repair processes.

Importance

During sleep the body's energy shifts focus from external activities such as processing information, movement and digestion to internal activities such as self healing, rejuvenation and repair. Some of the internal processes that occur during sleep include:

- **Cellular Repair:** The body must constantly keep up with the wear and tear of daily living. When awake the body is in a breakdown process or catabolic process, in which large amounts of adrenaline (the fight or flight hormone), noradrenaline and cortisol (two stress hormones) are released which helps the body deal with daily strains.^[3]

At night, these hormones drop and the body shifts to anabolic processes where it releases growth hormone which stimulates the cellular repair process.^[3] Growth hormone initiates protein synthesis, breaks down fats to supply energy for tissue repair, and stimulates cell division to replace old or malfunctioning cells.^[4]

Growth hormone is released in stage 4 of sleep, the deepest stage of sleep. Balancing catabolic and anabolic processes aids cellular repair which is vital for health and well-being. This also explains why it is necessary and common for a person to require more sleep when dealing with acute or chronic illnesses.

The maximum healing potential is between 11 p.m. and 1 a.m.

Immune System Replenishing: The immune system works hard to keep us free of illness by attacking anything that it does not recognize as self. The immune system also recognizes if one of the body's own cells has mutated or become cancerous and attempts to kill it off to keep us healthy. If the immune system recognizes an invader, it releases interleukins (a specific protein) which signal other immune cells to come to the area to multiply and attack. Special proteins called immunoglobins or antibodies are called upon to identify and neutralize foreign bodies. During sleep the body releases large amounts of interleukin 1 and tumor necrosis factor.^[4] Interleukin 1 is a powerful immune system messenger that allows the body to mount a fever if necessary and also helps to decrease inflammation.^[5]

Tumour necrosis factor is a potent killer of cancerous cells and rises ten fold in the blood during sleep. Natural killer cells are also affected by sleep.^[4] Although no change is noticed during a sleepless night, their number is 30% lower the following night.^[4] Natural killer (NK) cells are essential to the body's defenses. Decrease in NK cells indicates a weakened immune system making one more susceptible to illness. Sleep is of vital importance and assists the body's ability to fight infections, cancer and inflammation. A chronic state of insomnia increases the risk of disease.

Increased longevity. Sleep duration is related to length of life, with a greater risk of death in those sleeping fewer than 6 hours a night. Sleep deprivation is also linked to vehicle crashes and deaths. Insomnia early in adult life is a risk factor for the development of clinical depression and mental health disorders.

Muscle relaxation. During the night muscles can take a break and relax. Respiratory muscles also relax, resulting in the breathing rate slowing down. During REM sleep, muscles become so relaxed that they actually become temporarily paralyzed, called muscle atonia. This is thought to protect a person from acting out their dreams. Muscle relaxation is a necessary component of sleep in order to allow the body time to recharge and replenish. When muscles are relaxed, there are less metabolites formed, allowing for additional cellular repair and replenishing.

Weight management. Adequate sleep is required for weight management. Sleep deprivation is linked to weight gain, typically because the amount and quality of sleep affect hormone levels, namely the levels of leptin and ghrelin. Many physiological processes depend on these hormone levels to function properly, including appetite. Leptin is a hormone that affects the feeling of fullness and satisfaction after a meal, and ghrelin is the hormone that stimulates appetite. When you suffer from sleep deprivation, your body's levels of leptin fall and ghrelin levels increase. This means you end up feeling hungrier without feeling satisfied by what you eat, causing you to eat more and, consequently, gain weight.^[6]

Free radical scavenging. Sleep is the body's natural antioxidant. Throughout the night large amounts of free radicals are scavenged from the brain and other vital organs, protecting them from oxidative damage. Most individuals can handle a few days of sleep deprivation, but prolonged depletion of sleep creates advanced aging to the brain, neuronal damage and elevated night time cortisol levels.^[7]

Cognitive enhancements. Without adequate rest, the brain's ability to function quickly deteriorates impacting concentration, consolidation of memories, and the learning of new motor tasks.

The brain works harder to counteract sleep deprivation effects, but operates less effectively. Sleep helps with memory in two ways; first, when someone is sleep deprived, there is an inability to concentrate and, therefore, an inability to learn efficiently; secondly, in the consolidation of memory. Memory consolidation implies storing short term memories to long term memory. Memory consolidation occurs during sleep through the strengthening of neuronal connections that form memories.^[7] Another area of research is on sleep and

procedural memory. Procedural memory is the remembering how to do something and REM sleep seems to play a pivotal role in this.^[7] Insomnia early in adult life is a risk factor for the development of clinical depression and mental health disorders.^[9]

Chronic sleep deprivation is linked with cognitive impairments, the decrease of the brain's ability to problem solve and the impairment of an individual's ability to perform optimally. Sleep deprivation has been associated with increased accidents and injury.^[8] When decision-making abilities are compromised, the brain falls into rigid thought patterns that make it difficult to generate new problem-solving ideas. Insufficient rest can also cause people to have hallucinations.

Regeneration of personal essence. Adequate deep restful sleep is essential to a person's overall sense of wellbeing. It allows a person to process and recover from each day and to feel rejuvenated and ready to handle the next. Sleep is tied to a person's overall vitality and to their sense of inner strength and ability to heal. Lack of adequate restful sleep is associated with increased aging and with greater dissatisfaction in life. Sleep duration is related to length of life, with a greater risk of death in those sleeping fewer than 6 hours a night.

How Much Sleep Is Optimal?

When it comes to the amount of sleep needed for each person, there is tremendous variability among age groups but also among members of the same age population. The Canadian National Sleep foundation recommends 7 to 9 hours for adults. See the chart below for sleep recommendations for each age group. Please visit

- Newborns (0 – 2 months) need 12 - 18 hours
- Infants (3 to 11 months) need 14 - 15 hours
- Toddlers (1 – 3 years) need 12 - 14 hours
- Preschoolers (3 – 5 years) need 11 - 13 hours
- School-age children (5 – 10 years) need 10 - 11 hours
- Teens (10 – 17 years) 8.5 - 9.25 hours
- Adults need 7 - 9 hours

Influences

There are numerous internal and external factors that can promote sound restful sleep or can wake an individual leaving them lethargic, irritable and moody due to sleep deprivation. The most common factors that disturb sleep include:

Mental Unrest is the most common cause of a disruption in sleep.

Most individuals with an active mind find it difficult to fall asleep or find themselves waking between 3 and 5 am.

Both short term and long term stress and anxiety can cause significant impairments in an individual's ability to fall asleep. Stress and anxiety cause increased muscular tension and sympathetic nervous system activation. In addition to these negative emotional states impairing sleep, sleep deprivation increases an individual's level of stress and anxiety. Individuals become anxious and stressed about not sleeping creating a vicious cycle.

Anticipatory anxiety is anxiety that interferes with sleep. This is anxiety experienced the night before a significant event or a stressful period in life causing an overactive mind which in turn affects sleep ability.

Depression and feeling down or confused are also linked with insomnia. Working on figuring out and addressing what is really bothering you is often the best solution.

Food choices that you make greatly influence sleep.

Root vegetables are high in minerals and are more grounding and settling to the body helping promote restful sleep.

Tryptophan, an essential amino acid found in turkey, milk, miso soup, eggs, nuts, figs, fish, bananas, dates and papaya, helps the body to produce serotonin, a neurotransmitter that helps promote relaxation and sleep.

Complex carbohydrates and starches promote sleep as they release sugars into the blood causing a compensatory release of insulin followed by a drop in blood sugars causing the body to feel fatigued. Eating a high-carbohydrate meal (potatoes, pasta and whole grain breads) three or so hours before bed is often helpful for those that have trouble falling asleep.

Lettuce can often promote healthy sleep as it contains an opium-related substance combined with traces of the anticramping agent, hyoscyarnin. Include lettuce as part of your evening meal.

Include foods high in Vitamin B3 (niacin) such as legumes, peanuts, nutritional yeast, fish or poultry. Niacin is involved in serotonin synthesis and promotes healthy sleep.

A glass of warm milk with honey is one of the oldest and best remedies. Milk contains tryptophan which, when converted to serotonin, induces sleep and prevents waking.

On the contrary, certain foods can negatively impact sleep.

As most individuals know, caffeine is a nervous system stimulant. Some individuals are so sensitive that even a cup of coffee in the morning or chocolate bar can cause a sleepless night. Avoid foods high in caffeine such as coffee, tea, cola and chocolate.

Sugar stimulates the nervous system and hence, sugary desserts and for some even the consumption of fruit after dinner is best avoided if you desire a good night's sleep. Sugar causes a rapid increase in blood sugar which calls upon the pancreas to release insulin. Once insulin is released, sugar enters the cell and blood sugar rapidly drops. If sugar is ingested right before bed, a drop in blood sugar occurs in the night calling upon the adrenal glands to release hormones to restore blood sugar balance. This release of hormones wakes you up and affects the normal sleep patterns.^[12]

Foods high in tyramine increase the release of norepinephrine, a brain stimulant. If you have difficulty sleeping, avoid bacon, cheese, chocolate, eggplant, ham, sauerkraut, sugar, sausage, spinach, tomatoes and wine close to bedtime.

Alcohol, another nervous system stimulant, interferes with the natural sleep cycles and also increases anxiety levels interfering with sleep.^[7] Alcohol impairs the transport of tryptophan into the brain and hence, disrupts serotonin levels.

Any food that you are intolerant to is best avoided. Food intolerances are often the cause of snoring and can contribute to gas, heartburn, indigestion, pain and discomfort.

Diets high in meat or other proteins can inhibit sleep by blocking the synthesis of serotonin, making you feel more alert. Diets high in protein are also more acidic and take longer to digest.

Avoid too many ingredients in a meal and too much food late at night.

Dietary Regimen. Ensuring that your last meal of the day is about 3 hours before bedtime is important because:

It ensures that your blood sugar is not spiking in the middle of the night, thus waking you up.

It allows the body time to complete digestion so that when you are sleeping your body can focus on healing and repairing. It minimizes any discomfort that may be associated with going to bed with a full stomach.

During digestion your metabolic rate and body temperature increase. This increase in body temperature can throw off the internal stimulus for inducing sleep.

Smoking Individuals who smoke require more time to fall asleep, have less oxygen absorption, more congestion and snoring and less deep sleep.^[2] Another good reason to quit smoking!

Physical Activity People who regularly engage in exercise have fewer episodes of sleeplessness and typically fall asleep more easily and sleep more deeply and soundly.

- Exercise promotes improved sleep quality by allowing for smoother and more regular transitions between the cycles and phases of sleep.
- Increased physical activity is also associated with improved mood and well-being. Individuals who exercise appear to have better emotional balance, decreased anxiety and depression, thus promoting restful sleep.^[13]
- The change in body temperature promoted by exercise triggers areas in the brain that help to initiate sleep.^[14]
- When exercising, the body releases endorphins, a natural opioid in the brain, that increase feelings of wellbeing and decrease the sensation of pain. These endorphins are a nervous system stimulant and if one exercises too late in the evening, it impairs your ability to fall asleep.

- Muscle stiffness and soreness experienced after initiation of a new exercise routine can cause the body to experience pain, therefore, interfering with sleep.
- Too much physical activity or physical activity at the wrong time can also interfere with sleep. Do any aerobic or strenuous exercise in the morning or afternoon, not close to bedtime if experiencing sleep difficulties. Choosing to take a leisurely walk or to do some gentle yoga or stretching is a good way to unwind at the end of the day and will support your body winding down and preparing for sleep.

Sleep Regimen When you choose to sleep affects health. Sleep comes most easily and is the most conducive to health when it is in line with the natural circadian rhythms. Circadian rhythms govern the body's hormonal, physiological and behavioural processes. The most notable circadian rhythm is the sleep cycle.

- Establishing a regular sleep schedule and sleeping when it is dark and waking when it is light ensures balances between the delicate systems of the body. Not being in sync with the circadian rhythm can lead to hormone imbalance, seasonal affective disorder and jet lag just to name a few.^[16]
- Melatonin is the second most powerful message for the body's circadian rhythm. Melatonin is a hormone secreted by the pineal gland which is located in the center of the brain between the two hemispheres.^[17] Melatonin is the "hormone of darkness", as its levels rise in response to darkness and fall in response to sunlight. Its secretion begins in the evening as the sun is setting and signals the body to feel tired and go to bed. Melatonin production decreases throughout the night and reaches a low in the morning when one is cued to wake up. Exposure to increase in light in the evening or while sleeping can disrupt melatonin levels and often contributes to sleep disorders.
- Cortisol is known as the stress or the 'awake hormone. It is responsible for waking a person up. On a normal basis its release follows the circadian rhythm with a peak in cortisol naturally occurring between 6 and 8 a.m. The initiation of sleep is associated with low levels of cortisol. Many sleep problems, such as night time awakening and difficulty following asleep are linked with increased cortisol levels and are associated with chronic stress or adrenal fatigue.
- Body temperature is also governed by the circadian rhythm. Body temperature and sleep run independently, yet they are usually synchronized.^[17] Body temperature fluctuates throughout the day, rising in the morning making one alert and falling during the night. It is easiest to sleep when body temperature is reaching its lowest temperatures.^[3] Around 6 to 8pm body temperature reaches a peak and begins its decline, at the same time melatonin begins to rise making one feel sleepy.ii Temperature reaches its lowest point between 3 to 5 a.m.^[3]

Sleep Environment In order to sleep soundly it is important to have a sleep environment that is quiet, dark, secure and comfortable.

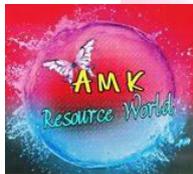
- Loud noise causes excess nervous system stimulation and inhibits the ability to sleep or to wake an individual from a sound sleep.
- Light entering the bedroom, either from the outdoors or from an alarm clock, impacts the release of melatonin from the pineal gland affecting hormone balance, causing a direct impact on the ability to fall asleep. Choose to sleep in a completely dark and quiet room.
- Temperature also plays a role in your ability to sleep soundly. At night the body temperature drops, cueing us to feel tired and to go to bed.

- In order to have a comfortable and uninterrupted sleep it is important to have enough covering on the bed to not cause one to wake feeling chilled.
- Having a comfortable mattress and a bedroom that is comfortable and free of stressors (i.e. computer, work, etc.) will help ensure a good night's rest.
- Reserve the bedroom for sleep and sexual activity. Watching television, reading or doing computer work can create a stimulating environment and impact the ability of the mind to equate going to bed with sleeping.

EMF Impact Research shows that having electronic devices in the bedroom disrupts sleep.

- Electronic devices contribute to daytime fatigue and are associated with disrupted sleep and un-restful sleep.
- There is a correlation between time spent watching television and delayed sleep onset, shorter sleep time and increased daytime fatigue.

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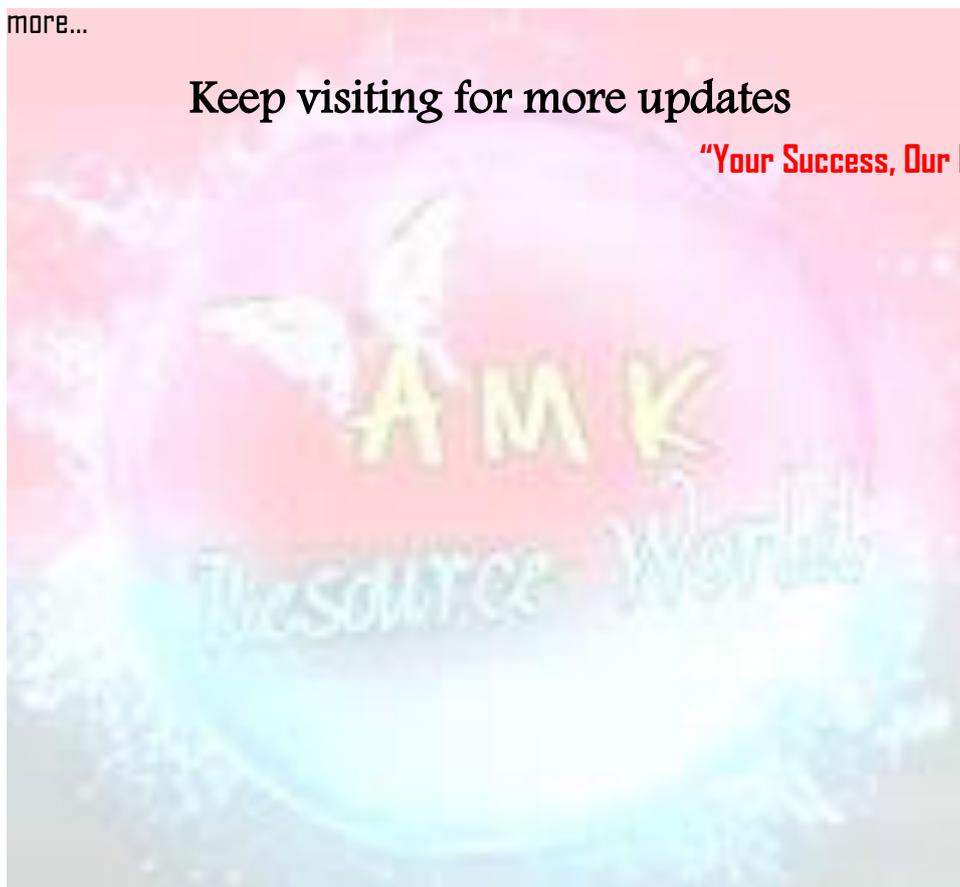
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