

Ensuring Physical Wellbeing in Digital Spaces

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A futuristic cityscape with glowing digital overlays and a woman wearing a VR headset. The scene is filled with neon lights, digital grids, and floating geometric shapes. In the foreground, a woman in a white long-sleeved shirt and dark pants is wearing a VR headset and holding a tablet. The background shows a city with tall buildings, cars, and people, all rendered in a digital, glowing style.

DIGITAL SPACE V/S CYBER SPACE

Dr. Deepali Negi, NDDTC (AIIMS, DELHI)

A BALANCED PERSPECTIVE

The positive side of
digital space





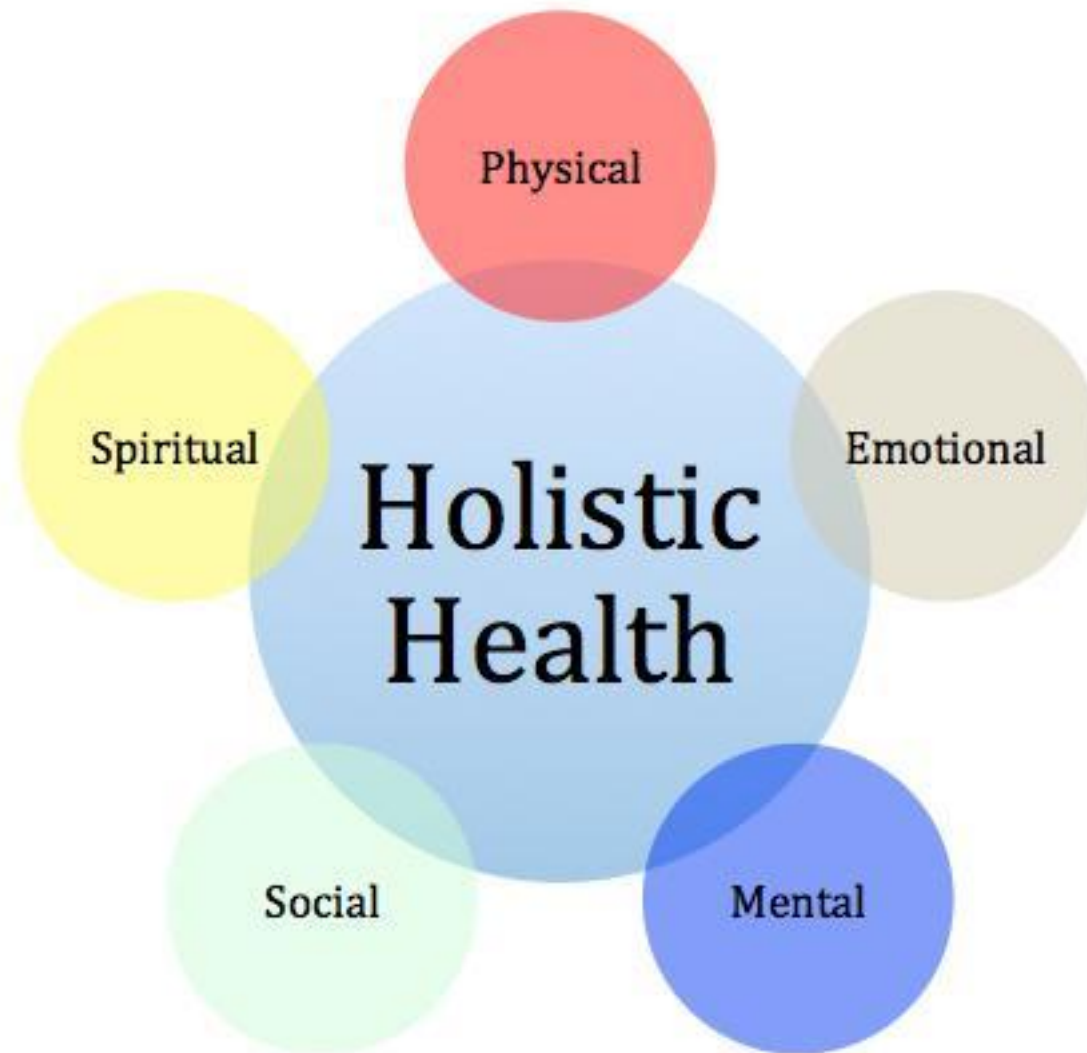
DARK SIDE OF DIGITAL SPACE

- Techno-stress
- Information overload and spam
- IT addiction and IT anxiety
- Hacking and malware
- Privacy concerns
- Online theft, cyberbullying, cybercrime, sexual crimes
- Role of AI : Prejudicial results, AI singularity

WHAT IS HEALTH?

- Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity
(WHO 2001)

DIMENSIONS OF HEALTH



A person with a backpack is walking away from the camera through a lush, sunlit forest. The scene is filled with tall trees and dense greenery, with sunlight filtering through the canopy, creating a warm and serene atmosphere. The person is wearing a light-colored jacket and a backpack, suggesting a hike or a walk in nature.

GOOD PHYSICAL HEALTH:

“A state of well-being where all of the body's internal and external parts, organs, tissues, and cells are functioning properly”

Physical Ill-Effects Of Digital Use

- Effect on sleep
- Effect on cardiovascular system
- Effect on vision
- Effect on musculoskeletal system
- Effect on hearing
- Effect on neurophysiological system
- Other possible effect on physical health

The background is a complex digital aesthetic. It features a light blue and white color palette. A grid of thin white lines is overlaid on a background of wavy, translucent digital patterns. These patterns consist of numerous small white dots and lines that create a sense of depth and movement, resembling data streams or digital waves. The overall effect is a futuristic, high-tech environment.

Effect of Digital Space on Sleep

- Displacing other more physical activities
- Exposure to bright white/blue light may interfere with the melatonin production of the body and thus interfere with the circadian rhythm
- Notifications can keep one awake
- Social media and FOMO keeping people awake
- Higher mental workload due to multi-tasking which can cause increased stress levels and decreased quality of sleep



What can we do about it: UNIVERSAL SLEEP HYGIENE

- **Practice healthy sleep habits**

1. Maintain regular sleep-wake patterns and a consistent pre-sleep routine (wind down).
2. Arise at about the same time each day (7 days a week), regardless of sleep quantity or quality the night before.
3. Avoid extended naps to compensate for poor nighttime sleep (limit naps to 30 minutes).
4. Establish a relaxing bedtime ritual (discontinue stress-provoking activities well before bedtime).

Control Environmental Factors

1. Set a wake-up alarm and keep the clock face turned away. Do not focus on how much time is spent awake in the middle of the night.
2. Avoid bringing electronic devices (e.g., mobile phones and tablets) to bed and do not check emails or surf the web in bed.
3. Keep the sleeping environment dark, quiet, comfortable, and slightly on the cool side.
4. Use a white noise machine to screen out background noise and increase arousal threshold.

Exercise

1. Exercise regularly each day; moderate to vigorous exercise for 30 minutes, 3 to 4 days per week or more is likely to improve sleep quality.
2. Avoid vigorous exercise right before bedtime; 2 to 3 hours prior to habitual bedtime is okay and may help deepen sleep.

Limit Stimulating Substances

1. Eat regular meals and avoid heavy, spicy foods for 2 hours before bedtime.
2. Avoid substance use before bedtime and never smoke in the middle of the night.
3. Reduce caffeine use and discontinue all caffeine 8 hours before bedtime (eg, coffee, tea, soft drinks, chocolate)

The background features a light blue and white grid pattern overlaid with several wavy, glowing lines that create a sense of motion and digital connectivity. Small, faint icons and symbols are scattered throughout the grid.

Effect of Digital Space on Cardiovascular System

- Obesity is a direct and tangible effect of decrease physical activities resulting from media usage
- Impact of advertisements/fads on the diet of individuals
- Chronic sympathetic arousal and its effect on CVS
- Cortisol dysregulation in children consuming more than 3 hours of media/day
- Studies have linked decreased insulin sensitivity with increasing television, video game or computer use



What can we do about it?

Healthy food choices:

- Encourage fresh fruits and vegetables, whole grains and fat-free or low fat milk instead of processed food.
- Buy fewer high-calorie low-nutrient food. Include variety of protein food.
- Avoid labelling food as “good” or “bad”.
- Get involved in planning, shopping and preparing meals.
- Discourage eating meals while watching tv.

What can we do about it?

Active life style:

- Focus on good health and not a certain weight goal. Model healthy and positive attitudes towards food and physical activity.
- Walk or cycle when required. Engage in active chores.
- Limit the amount of time watching TV, playing videogames or working on computer.
- Encourage physical activity. Participate in family physical activity time regularly. Provide safe accessible area for children to play.

The background is a complex digital visualization. It features a light blue and white color palette. A grid of thin lines is overlaid on a background of wavy, undulating lines that create a sense of depth and movement. Scattered throughout are various geometric shapes: small squares, circles, and dots, some of which are highlighted in a slightly different shade of blue. The overall effect is that of a data visualization or a digital landscape.

Effect of Digital Space on Vision

- Computer Vision Syndrome(CVS) and Digital Eye Strain(DES)
- Headaches
- Impaired vision – increased incidence of myopia
- Dry eyes and irritation
- Studies report, with increasing screen time, the dominant eye develops transient diplopia, refractory problems and eventually decreased acuity



What can we do about it?

- Take eye breaks: (20-20-20 rule)
 - ✓ **every 20 minutes, look at something at least 20 feet away for at least 20 seconds.**
- Blink often to refresh to refresh your eyes.
- Adjust monitor directly in front at an arm's length away so that your eye gazes slightly downward.
- Use artificial tears. Can help prevent and relieve dry eyes.
- Choose the right eyewear.

What can we do about it?

- Adjust the lighting and check for glares which can strain your eyes.
- Monitoring screen time
- Adjust your screen settings.

The background features a light blue and white color palette. It consists of a grid of thin lines overlaid with several wavy, translucent bands that create a sense of depth and movement. Scattered throughout are small, glowing white and light blue dots and circles, some of which are slightly larger and more prominent, resembling data points or particles in a digital space.

Effect of Digital Space on Musculoskeletal system

- Decreased exercise
- Odd postures
- Musculoskeletal strain and pain
- Carpal tunnel syndromes
- Neck rigidity and pain due to downward gaze
- Bone mineral density lower in boys who play video games for extended periods of time



What can we do about it?

☐ Take breaks:

- **Stand, stretch and walk at least a minute or two every half hour.**



DO



Alternate between sitting and standing as much as possible.

DON'T



Sit or stand for long periods of time without interruption.

Proper Posture



DO



Sit Up!

DON'T



Slouch!

□ **Setting**

- Digital equipment needs to be placed at appropriate and convenient locations for easy access
- Use posture friendly props and chairs.
- Set up the top of your screen at 15-20 degree to the eye level.

□ **Desk exercises and stretches**

DO



Hold your phone or tablet directly in front of your face when using it.

DON'T



Hold your phone below eye level and tilt your head forward.

The background features a light blue and white grid pattern overlaid with flowing, wavy lines that create a sense of motion and digital connectivity. Scattered throughout are small, glowing geometric shapes like squares and circles, some of which are connected by thin lines, suggesting a network or data flow.

Effect of Digital Space on Hearing

Noise-induced Hearing: Loss from overuse of earphones at high volume

- Activate volume control limits on devices.
- Limit listening time
- Take regular breaks
- Use over-ear headphones instead of earphones.
- Get regular hearing tests



The background features a light blue and white color palette. It consists of a grid of thin lines overlaid with several wavy, ribbon-like patterns that flow across the frame. Scattered throughout are small, semi-transparent geometric shapes such as squares, circles, and hexagons, some of which are slightly blurred, giving a sense of depth and movement. The overall aesthetic is clean, modern, and tech-oriented.

Neurophysiological Effects of Digital Space

Neurophysiological effects of Internet addiction

- Numerous investigations so far have concluded that any form of addiction to the internet causes structural changes in the brain, specifically in its frontal lobe.
- The ability to filter out irrelevant information and a reduced capacity for coping with demanding and complex tasks are related to such structural alterations.
- Studies on TV exposure among pre-schoolers have found discord during decision making processes and white matter changes

What can we do about it?

“Digital diet”

- Reduce the number of apps to only essential ones
- Turn off notifications
- Recognize triggers of phone use
- Set goals for when you can use your smartphone
- Turn off your phone at certain times of the day

The background features a light blue and white color palette. It consists of a faint grid pattern overlaid with several wavy, mesh-like lines that create a sense of depth and movement. Scattered throughout are small, semi-transparent geometric shapes like squares and circles, along with some circular patterns that resemble orbits or data paths.

Other Possible Effect on Physical Health

Effects on Fertility

- Studies on the link of EMR emitted by mobile phones on male fertility and sperm count.
- Thermal and non thermal effects:
 - ✓ Thermal – Increased temperature of testes can interfere with spermatogenesis
 - ✓ Non-thermal: Reactive oxygen species (ROS) may be produced more frequently as a result of nonthermal interactions, which may cause DNA damage. A little amount of ROS has a crucial functional role in the acrosome response, binding to the oocyte, as well as sperm capacitation.

- Mobile phones use electromagnetic in the microwave range. Other digital wireless systems, such as data communication networks, The WHO have classified mobile phone radiation on the IARC scale into Group 2B - possibly **carcinogenic**. That means that there "could be some risk" of carcinogenicity.
- The results of some studies and International Commission of Non Ionization Radiation Protection (ICNIRP) reports showed the people who spend more than 50 minutes a day using a cell phone could have **early dementia** or other thermal damage.

Good Digital Practices

- Keep TV/ laptops/ computers etc in a common area and definitely out of bedrooms.
- Develop digital rules in consultation with children, and follow it.
- Disconnect regularly and for healthy periods of time. Balanced online-offline activities.
- Sleep without your phone
- Regular physical activities during breaks
- Regular interaction of parents with children

Good Digital Practices

- Focus on safety. Orientation on do's & don'ts of cyber security.
- Understanding privacy and risks of internet use – vetting sources
- Dodging overstimulation and misinformation
- Limiting apps and notifications
- Use parental controls in devices and enable safe search in browsers while children are surfing the web.
- Awareness about cyber bullying.
- Do not disseminate unverified information

Conclusion: Focus on a Better Future

- Use the digital space for its positives
- Accessing new information and developing new skills
- Increase social connectivity and collaboration

The background features a light blue grid overlaid on a series of wavy, translucent lines that create a sense of depth and movement. Scattered throughout are small, glowing geometric shapes like circles and squares, some of which appear to be part of a larger, faint network or data structure.

THANK-YOU

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