Cancer Related Fatigue and Cognitive Impairment

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A TRADITION OF INDEPENDENT THINKING

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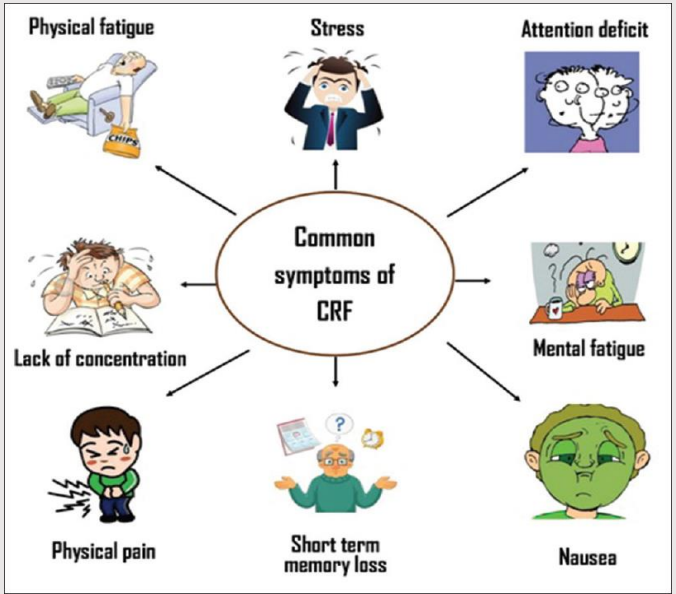
Cancer Related Fatigue (CRF)

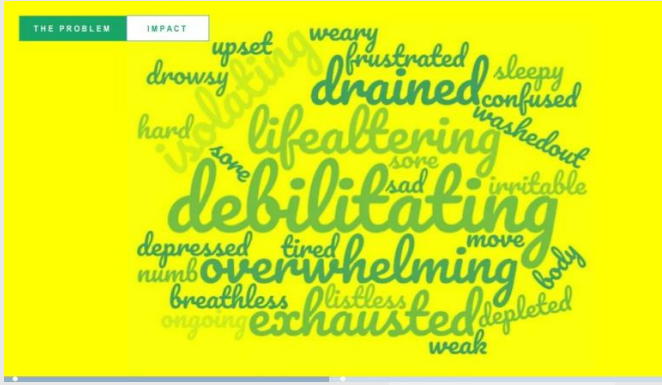
- Cancer-related fatigue is a distressing, persistent, subjective sense of physical, emotional, and/or cognitive tiredness or exhaustion related to cancer or cancer treatment that is not proportional to recent activity and interferes with usual functioning (NCCN, 2022)
- CRF is the most frequently experienced symptom of cancer & cancer treatment. It is also the most severe and most under treated symptom (O' Regan & Hegarty, 2017)
- Causes: Fatigue is almost Universal in those receiving Chemo, radiotherapy, bone marrow / stem cell transplantation or biologic response modifiers (NCCN, 2022).
  - The exact mechanism that causes / promotes CRF is unknown.
  - Cancer pts - Prolonged stress that produces a stress response – Increased energy needs. Physiological factors include: anaemia, treatments , cachexia,
  - Intrinsic factors : Biological Response Modifiers, Nutrition, Psychological factors, Situational factors, Concurrent factors
  - Extrinsic factors: Treatments, Hormone and Drug therapy

CRF Severity - Survivorship

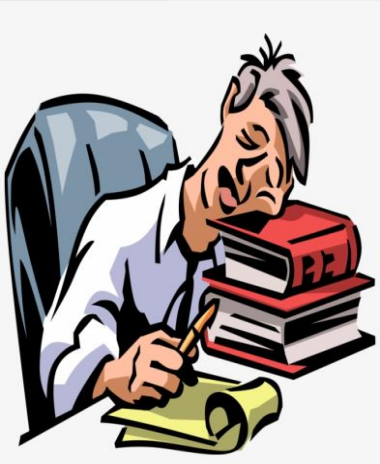
- Cancer related fatigue is the most common and distressing symptom identified in Cancer survivors
  - Cancer survivors report that fatigue is a disruptive symptom months or even years after treatment ends
- Approx 30% of patients continue to experience severe fatigue in the year after treatment, and 20% of patients still report severe fatigue at 10 years post-treatment (Joly et al. 2019)
- Some studies found that severe fatigue was found to occur in one in four breast cancer survivors (Abrahams et al. 2018)
- Higher levels of fatigue go together with a worse QOL, lower functioning and work ability.
- CRF in Survivorship is reported as being infrequently addressed by health care practitioners, and its impact on quality of life is underestimated



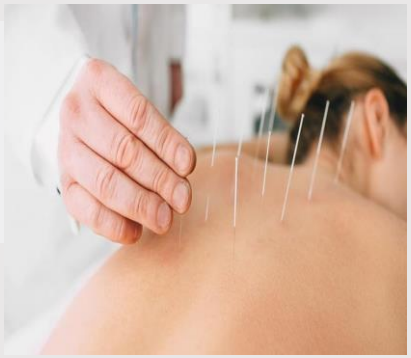
Cancer Related Fatigue & its impact



- Cancer-related fatigue (CRF) is different from other types of fatigue by its severity and its persistent nature and the inability to alleviate it through rest or sleep (Fabi et al. 2020)
- CRF : Multifactorial , subjective and rarely isolated – mostly occurs in symptom clusters of pain, distress, anemia, and sleep severity disturbances
- CRF is considered – under reported & under diagnosed
- A strong correlation exists between Fatigue and psychological symptoms – depression and anxiety.
- CRF limits the quality of life (QOL) of cancer survivors and their reincorporation to normal life, including their ability to return to work
- Fatigue that initially presents months after the completion of adjuvant therapy or fatigue that worsens over this period warrants additional evaluation.



CRF Management

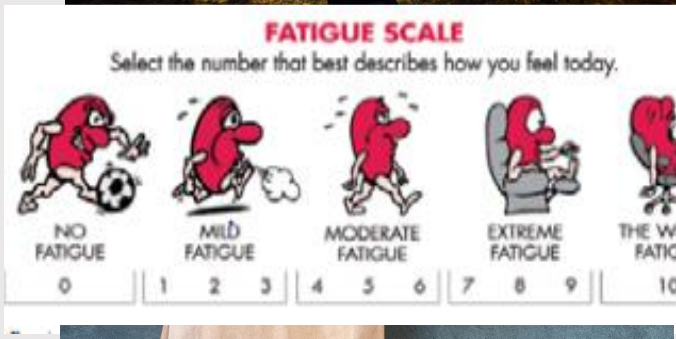


- **Pharmacological :**
  - Treatment for pain, emotional distress & anaemia
  - Psychostimulants

- **Non Pharmacological**
  - Exercise - the most supporting evidence of effectiveness (Cramp & Daniel, 2012; o' Regan et al. 2019, NCCN, 2022).
  - Psychosocial interventions : CBT, Psycho education Interventions, behavioural therapy.
  - Complementary therapies: Acupuncture, Massage therapy, yoga.
  - Energy conservation, distraction, self monitoring, hypnosis, mindfulness based stress reduction.
  - Nutrition consultation, Sleep therapy

Tips and Strategies to Manage CRF

- Treat causes of worsening fatigue – Pain, anaemia, poor sleep & distress
- Rest and try and sleep for 7-8 Hrs a night.
  - Take a nap if necessary but do not sleep for longer than 20 minutes.
- Nutrition: Balanced diet- fresh fruit , veg and protein.
- Pace yourself and plan your day.
- Reduce workload– on line grocery shopping, home help/ cleaner, batch cooking, pre prepared foods.
- Keep a diary/ scale of daily energy levels



7 Tips to Help Fight Fatigue

1. Stay as active as you can. Walking and, if you're able, regular exercise are beneficial.

2. Get adequate rest, but not too much. Take short naps of 30 minutes or less if needed.

3. Save your energy and prioritize which tasks are most important each day.

4. Ask for help when needed. Friends and family want to help you.

5. Eat healthfully and drink plenty of water.

6. Beat stress via relaxation exercises, counseling and stress management training.

7. Talk to your cancer care team if fatigue persists.

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CRF and Cognitive Impairment

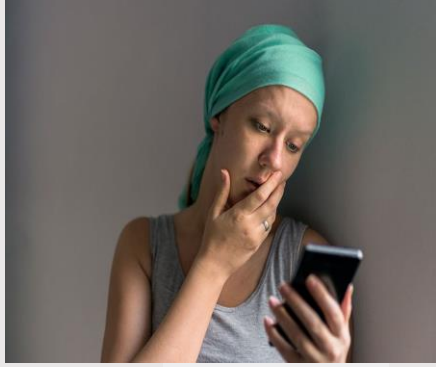
- People frequently describe CRF as including brain or cognitive tiredness or exhaustion that is not proportional to recent physical activity

- Cognitive impairment has been found to correlate with Fatigue in people with a cancer diagnosis.
  - CRF negatively impacts executive function, explicit memory, and word recognition processing speed.
- Increased levels of fatigue regularly has been identified with worst cognitive defects.
- A number of studies have identified that CRF severity and its impact were significantly associated with lower brain processing speed and complex attention performance (Gullett et al. 2019).

Cancer Related Cognitive Impairment (CRCI)

- Both patients and survivors often experience changes in cognition, also called "cancer-related cognitive impairment" (CRCI), as a side effect of cancer and cancer treatment
- CRCI occurs in up to 30% of people prior to any treatment and in up to 75% during treatment.
- 12% - 75% of cancer survivors experience CRCI, some up to 20 years following completion of treatment (Small & Lim, 2020)
- The development of CRCI affects quality of life and can result in diminished functional independence
- Cognitive impairment includes symptoms such as memory loss, drowsiness, and inattention particularly in complex information processing speed, working memory, learning efficiency, and executive functions (Ho et al. 2022)

Causes of CRCI

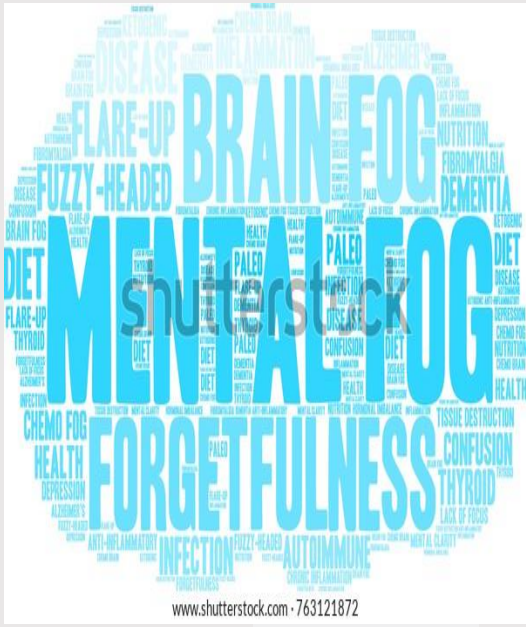


- Cognitive changes in people with a cancer diagnosis may be induced by cancer treatment or by the presence of cancer itself (Országhová et al. 2021).
- Chemotherapy – Often referred to as "Chemo Brain" or "Chemo Fog". Between 13 to 70 % of people receiving cancer chemotherapy have measurable cognitive impairment (Pendergrass, 2018)
- Patients receiving brain radiation treatments often experience radiation-induced fatigue and headache, in addition to possible cognitive impairment
- Possible risk factors include administered treatment, genetic predisposition, age and psychological factors such as anxiety, depression or fatigue.
- Multiple studies suggest that hormonal therapy for both men with prostate cancer and women with breast cancer can have an impact on cognition

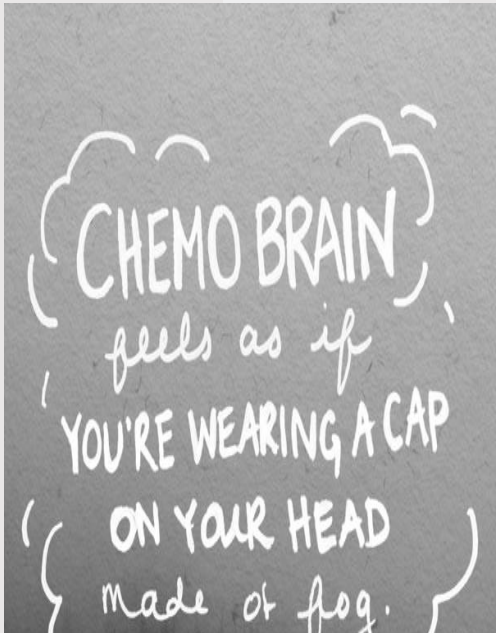
CRCI Common Symptoms

- Signs and symptoms of CRCI can include the following:
  - Being unusually disorganized.
  - Difficulty with: concentrating, finding the right word, multitasking, learning new skills
  - Feeling of mental fogginess. Short attention span
  - Short-term memory problems
  - Taking longer than usual to complete routine tasks
  - Trouble with verbal memory, such as remembering a conversation
  - Trouble with visual memory, such as recalling an image or list of words
  - Feeling mentally "slower" than usual, Confusing dates and appointments, Misplacing objects & Fumbling for the right word or phrase.
- Survivors experiencing CRCI typically report feeling 'less sharp' post-treatment, with greater mental effort required for everyday tasks (Kanaskie and Loeb, 2015)

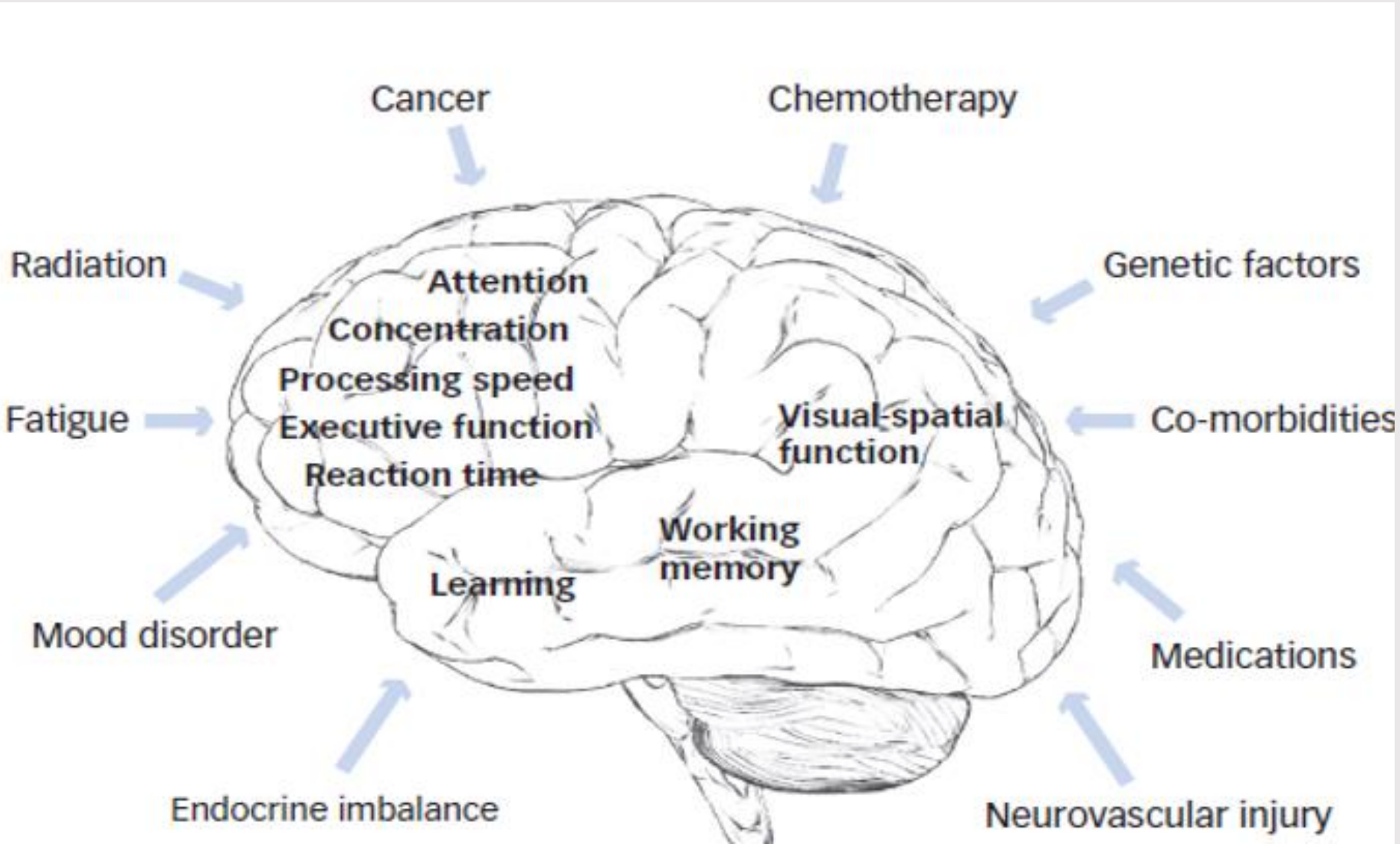
Impact of CRCI



- Cancer Survivors report that CRCI contributes to diminished quality of life – Economic, emotional, interpersonal costs and greater occupational difficulties
- During the five years following treatment, studies found that people were able to recover much of their cognitive function. Verbal recall (the ability to call up a known word—one that is on the "tip of the tongue"), however, was more difficult to recover than other functions.
- Some functions, such as verbal fluency and executive function (including abilities such as planning and organizing) improved during the five years post-treatment, whereas motor skills did not improve during this time



Factors known to influence Cognitive Performance in Patients with Cancer



Research - Management of CRCI

- Regardless of the cause, cognitive rehabilitation, CBT, and mindfulness-based interventions have the most evidence of effectiveness to date in improving perceived and objective CRCI (Chai et al. 2021)

- A total of six interventions have been recently identified:cognitive behavioural therapies (CBT), cognitive rehabilitation (CR), cognitive training (CT), meditation/mindfulness-based interventions, psychoeducation, and supportive care (Cheng et al. 2022)

- Recently, it has been proposed that the combination of cognitive stimulation and physical activity could be more beneficial for cognition.

Management of CRCI

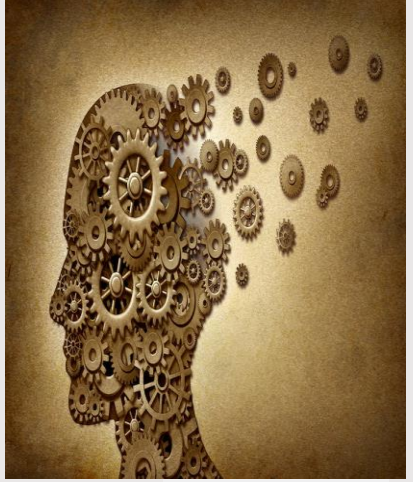
- **Basic – Life style:** Exercise. Nutrition, sleep.
  - Exercise: Increases O2 circulation in brain, improves brain function
  - Nutrition : Increase Vegetable intake.
- **Self care / self management:** Staying mentally active, Daily reading, Active listening, Taking notes , organisation and memory habits, Brain games (suduko, crosswords, quiz), Routine and forming good habits.
- **Intensive interventions :** Medication, Psychotherapy, Cognitive Behavioural Therapy, Cognitive rehabilitation.
- **Computer based strategies.**
- **Complementary therapies**: Art therapy, Meditation, Music therapy, Relaxation exercises
- Recently, it has been proposed that the combination of cognitive stimulation and physical activity could be more beneficial for cognition (Binarelli et al. 2021)

Cognitive training

- Cognitive training is a behavioural method of training based on models of neuroplasticity (cognitive skills can be improved using drills to exercise the brain).

- **Practical Skills:**
  - **Repetitive exercises to train your brain.** Memory and thinking exercises may help your brain repair broken circuits that may contribute to CRCI.
  - **Tracking and understanding what influences memory problems-** You may find it more difficult to concentrate when your'e hungry, tired or at certain times of the day.
  - **Exercise your brain.** Crossword puzzles, Suduko or number games. Start a new hobby or a new skill, (new language and musical instrument

CRCI – Coping Strategies/ Practical skills



- Journaling
- Keeping a list of reminders / post its at hand.
- Stay organized. Use calendars or planners.
- Focus on one task at a time (avoid multitasking)
- Keep things as simple as possible
- Try and avoid becoming over tired – take a nap during the day (no more than 20 minutes)
- Mindfulness – Meditation, Yoga and Tai Chi
- Control what you can about your working environment
- **Take frequent breaks.** Divide tasks into portions a
- Make a list of a list of priorities for the day.
- Get in a rut: Keys, glasses. House hold items.

Take Home Message

- CRF is more severe than fatigue that healthy people experience. Fatigue may fluctuate throughout the day and can have more than one cause’
- Both Fatigue and Cognitive deficits can occur long after treatment finishes which can make return to normal lifestyle and work difficult for many people
- There is no current standard of care treatment for CRCI, but there is growing evidence that cognitive rehabilitation programs, exercise,
- Several types of interventions have proven to be beneficial in reducing CRF and CRCI particularly interventions aimed at increasing physical activity

Helpful Resources

- American Cancer Society (2022) Chemo Brain. https://www.cancer.org/content/dam/CRC/PDF/Public/7288.pdf
- Irish Cancer Society (2020). Coping with Fatigue. file:///C:/Users/SONM/Downloads/Coping%20with%20fatigue%202020%20for%20WEB_0.pdf
- National Cancer Institute (2021) Fatigue. https://www.cancer.gov/about-cancer/treatment/side-effects/fatigue
- NCCN (2020). Guidelines for Patients :Survivorship care for Cancer- Related Late and Long Term Effects. https://www.nccn.org/patients/guidelines/content/PDF/survivorship-crl-patient.pdf

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THANK YOU