

All links herein incorporated by reference.

Alzheimers

Disturbance of the immune system by electromagnetic fields-A potentially underlying cause for cellular damage and tissue repair reduction which could lead to disease and impairment.

The number of millennials with early-onset Alzheimer's disease is surging, report finds

<https://www.phillyvoice.com/millennials-early-onset-dementia-alzheimers/>

Between 2013 and 2017, early-onset dementia and Alzheimer's diagnoses increased by 83% among commercially insured Americans aged 30 to 44, according to a report released by the health care insurer. That age group includes the oldest millennials.

Overall, early-onset diagnoses increased by 200% among commercially insured Americans between ages 30 to 64. That included a 50% jump among those 45 to 54 and by 40% for those aged 55 to 64.

Study Finds Electromagnetic Fields May Increase Risk of Alzheimer's

<https://news.usc.edu/12202/Study-Finds-Electromagnetic-Fields-May-Increase-Risk-of-Alzheimer-s/>

EMFs and Alzheimer's disease

<https://www.cdc.gov/niosh/nioshtic-2/00241504.html>

Electromagnetic field exposure may cause increased production of amyloid beta and eventually lead to Alzheimer's disease

<https://n.neurology.org/content/47/6/1594>

Risk factors for Alzheimer disease: a population-based case-control study in Istanbul, Turkey.

<https://europepmc.org/article/MED/14512826>

Alzheimer's disease: insights from epidemiology.

Abstract

The objective is to study risk factors for Alzheimer disease (AD) in Istanbul, Turkey. This is a population-based case-control study. We screened people over age 70 in the community for cognitive impairment. The screen positives and a proportion of screen negatives underwent neurologic examination in the second phase. Cases were 57 "probable" AD patients and controls were 127 cognitively normal individuals identified by neurologic examination. Odds ratios (OR) were calculated using multivariate logistic regression analysis. Having a university/college degree had a protective effect on AD risk (OR = 0.10, 95% confidence interval [CI] = 0.02-0.50). Exposure to occupational electromagnetic field had an OR of 4.02 (95% CI = 1.02-15.78). Use of electricity for residential heating also showed elevated risk (OR = 2.77, 95% CI = 1.12-6.85). Our results suggest that having a higher education is protective from AD and that electromagnetic field exposure at work or at home is a significant risk factor.

<https://europepmc.org/article/MED/11442298>

Occupations with exposure to electromagnetic fields: a possible risk factor for Alzheimer's disease.

<https://europepmc.org/article/MED/7677130>

EMFs and Alzheimer's disease

Abstract

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<https://n.neurology.org/content/49/1/312.1>

Studies Link EMF Exposure to Higher Risk of Alzheimer's : Health: Those whose jobs involve greater levels of electromagnetic fields, such as tailors and dressmakers, may be three times as likely to develop the disease, researchers say.

<https://www.latimes.com/archives/la-xpm-1994-07-31-mn-22049-story.html>

This link Contains all east a dozen or more studies o Alzheimers and EMFs

<http://www.emfs.info/research/abstracts/alzheimers-abstracts/>

<http://bioinitiative.info/bioInitiativeReport2012.pdf?eid=O%2F0BIv%2FBAW7SjL3GFWSgldWRd%2FO9s8%2FMTKLubQi9%2F9NhvcHSaX43xMOeHK9RCJTBylyVWaOwoAfJ07fy55PDEazlNpDNNB9ygPKA A1mBQFTUzf82xQ%3D%3D>

Alzheimer's disease is a disease of the nervous system. There is strong evidence that long-term exposure to ELF is a risk factor for Alzheimer's disease

B. Changes in the Nervous System and Brain Function Exposure to electromagnetic fields has been studied in connection with Alzheimer's disease, motor neuron disease and Parkinson's disease. (4) These diseases all involve the death of specific neurons and may be classified as neurodegenerative diseases. There is evidence that high levels of amyloid beta are a risk factor for Alzheimer's disease, and exposure to ELF can increase this substance in the brain. There is considerable evidence that melatonin can protect the brain against damage leading to Alzheimer's disease, and also strong evidence that exposure to ELF can reduce

melatonin levels. Thus it is hypothesized that one of the body's main protections against developing Alzheimer's disease (melatonin) is less available to the body when people are exposed to ELF. Prolonged exposure to ELF fields could alter calcium (Ca^{2+}) levels in neurons and induce oxidative stress (4). It is also possible that prolonged exposure to ELF fields may stimulate neurons (particularly large motor neurons) into synchronous firing, leading to damage by the buildup of toxins.

Evidence for a relationship between exposure and the neurodegenerative diseases, Alzheimer's and amyotrophic lateral sclerosis (ALS), is strong and relatively consistent (see Chapter 12). While not every publication shows a statistically significant relationship between exposure and disease, ORs of 2.3 (95% CI = 1.0-5.1 in Qio et al., 2004), of 2.3 (95% CI = 1.6-3.3 in Feychting et al., 2003) and of 4.0 (95% CI = 1.4-11.7 in Hakansson et al., 2003) for Alzheimer's Disease, and of 3.1 (95% CI = 1.0-9.8 in Savitz et al., 1998) and 2.2 (95% CI = 1.0-4.7 in Hakansson et al., 2003) for ALS cannot be simply ignored.

Section 12 Melatonin, Alzheimers Disease and Breast Cancero There is strong epidemiologic evidence that long-term exposure to ELF magnetic field (MF) is a risk factor for Alzheimers disease.o There is now evidence that 1) high levels of peripheral amyloid beta are a risk factor for AD and 2) medium to high MF exposure can increase peripheral amyloid beta.High brain levels of amyloid beta are also a risk factor for AD and medium to high MF exposure to brain cells likely also increases these cells' production of amyloid beta.o There is considerable in vitro and animal evidence that melatonin protects against Alzheimer's disease. Therefore it is certainly possible that low levels of melatoninproduction are associated with an increase in the risk of AD.o There are insufficient studies to formulate an opinion as to whether radiofrequency MF exposure is a risk factor for AD.o Some studies on EMF show reduced melatonin levels, There is sufficient evidence from in vitro and animal studies, from human biomarker studies, from occupational andlight-at-night studies, and a single longitudinal study with appropriate collection of urine samples to conclude that high MF exposure may be a risk factor for breast cancer.o There is rather strong evidence from case-control studies that longterm, high occupational exposure ($> 10 \text{ mG}$ or $1.0 \text{ } \mu\text{T}$) to ELF magnetic fields is a risk factor for breastcancer.o Seamstresses are, in fact, one of the most highly MF exposed occupations, with exposure levels generally above 10 mG ($1.0 \text{ } \mu\text{T}$) over a significant proportion of theworkday. They have also been

consistently found to be at higher risk of Alzheimer's disease and (female) breast cancer. This occupation deserves attention in future studies. There are no studies of RF magnetic fields on breast cancer that do not exclude ELF magnetic field, so that predictions of RF magnetic field alone on breast cancer cannot be assessed at this time.

Factors that act directly or indirectly on the nervous system can cause morphological, chemical, or electrical changes in the nervous system that can lead to neurological effects. Both RF and ELF EMF affect neurological functions and behavior in animals and humans. Two hundred eleven (211) new papers that report on neurological effects of RFR published between 2007 and early 2014 are profiled. Of these, 144 (68%) showed effects and 67 (32%) showed no effects. One hundred five (105) new ELF-EMF papers (including two static field papers) that report on neurological effects of ELF-EMF published between 2007 and early 2014 are profiled. Of these, 95 (90%) show effects and 10 (10%) show no effect. (Lai, 2014 – Section 9) K. Evidence for Cancer (Childhood Leukemia) With overall 42 epidemiological studies published to date power frequency ELF-EMF is among the most comprehensively studied environmental factors. Except ionizing radiation no other environmental factor has been as firmly established to increase the risk of childhood leukemia. Sufficient evidence exists from epidemiological studies of an increased risk from exposure to EMF (power frequency ELF-EMF magnetic fields) and cannot be attributed to chance, bias or confounding. Therefore, according to the rules of IARC such exposures can be classified as a Group 1 carcinogen (Known Carcinogen). There is no other risk factor identified so far for which such unlikely conditions have been put forward to postpone or deny the necessity to take steps towards exposure reduction. As one step in the direction of precaution, measures should be implemented to guarantee that exposure due to transmission and distribution lines is below an average of about 1 mG. This value is arbitrary at present and only supported by the fact that in many studies this level has been chosen as a reference. (Kundi, 2012 – Section 12) L. Melatonin, Breast Cancer and Alzheimer's Disease MELATONIN AND BREAST CANCER: Eleven (11) of the 13 published epidemiologic residential and occupational studies are considered to provide (positive) evidence that high ELF magnetic fields (MF) exposure can result in decreased melatonin production. The two negative studies had important deficiencies that may certainly have biased the results. There is sufficient evidence to conclude that long-term relatively high ELF MF exposure can result in a decrease in melatonin production. It has not been determined to

what extent personal characteristics, e.g., medications, interact with ELF MF exposure in decreasing melatonin production.

There is sufficient evidence to conclude that long-term relatively high ELF MF exposure can result in a decrease in melatonin production, which may increase risk for breast cancer. It has not been determined to what extent personal characteristics, e.g., medications, interact with ELF MF exposure in decreasing melatonin production. New research indicates that ELF MF exposure, in vitro, can significantly decrease melatonin activity through effects on MT1, an important melatonin receptor. Five longitudinal studies have now been conducted of low melatonin production as a risk factor for breast cancer. There is increasingly strong longitudinal evidence that low melatonin production is a risk factor for at least post-menopausal breast cancer. (Davanipour and Sobel, 2012 – Section 13)

ALZHEIMER'S DISEASE: There is now evidence that a) high levels of peripheral amyloid beta are a risk factor for AD, and b) medium to high ELF MF exposure can increase peripheral amyloid beta. High brain levels of amyloid beta are also a risk factor for AD and medium to high ELF MF exposure to brain cells likely also increases these cells' production of amyloid beta. There is considerable in vitro and animal evidence that melatonin protects against AD. Therefore it is certainly possible that low levels of melatonin production are associated with an increase in the risk of AD. There is strong epidemiologic evidence that exposure to ELF MF is a risk factor for AD. There are now twelve (12) studies of ELF MF exposure and AD or dementia. Nine (9) of these studies are considered positive and three (3) are considered negative. The three negative studies have serious deficiencies in ELF MF exposure classification that results in subjects with rather low exposure being considered as having significant exposure. There are insufficient studies to formulate an opinion as to whether radiofrequency MF exposure is a risk or protective factor for AD. There is now evidence that (i) high levels of peripheral amyloid beta are a risk factor for AD and (ii) medium to high ELF MF exposure can increase peripheral amyloid beta. High brain levels of amyloid beta are also a risk factor for AD and medium to high ELF MF exposure to brain cells likely also increases these cells' production of amyloid beta. There is considerable in vitro and animal evidence that melatonin protects against AD. Therefore it is certainly possible that low levels of melatonin production are associated with an increase in the risk of AD. (Davanipour and Sobel, 2012 – Section 13)

