

Abstracts - Indian Ageing Congress 2016

- **Deadly Young- Old relationship in the Era of Globalization**

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Ageing of population has become a global issue with its constant increase during the second half of the last century. Globalization, on one side, made easy availability of life saving medicines. Supply of nutrient & health facilities, controlled various communicable diseases. Hence, resulted in drastic reduction in mortality rates, substantial increase in life expectancy at birth and the overall span of aged people. On the other side, it has cornered old within the four walls of home, separated them from young member/s of the family, deprived them from honor and love they used to get centuries ago. Consequently, the traditional values and institutions are in the process of erosion resulting in weakening of inter-generational ties that were the hallmark of the traditional family.

This paper is trying to understand ageing in Indian context from globalization perspective. One needs to look at role of globalization in individual's private lives and its impact on aged member of the family. There is dearth of seriousness on this topic. The discussion and deliberation on the issue will enhance our understanding and will definitely provide us a new perspective to look at the 'excluded member'.

The paper is based on the secondary sources. Material will be collected from books, journals articles, newspaper articles, internet sources, reports etc. This paper will argue that study of ageing is detrimental to overall developmental of the country. Although the criticality of situation varies from rural to semi- urban to urban but aged people are disadvantaged everywhere.

Keywords: Aged, Globalization, Family, Inter- generational gap.

- **Major Depressive Disorder Associated with Accelerated Cellular Aging**

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Background: Recent study data support the association of accelerated and pathological aging in diverse psychiatric disorders including major depressive disorder (MDD). Data on peripheral blood biomarkers of cellular aging in comparison to healthy are limited.

Objective: The aim of our study was to investigate the possible differences in the peripheral blood biomarkers of cellular aging in MDD patients in comparison to healthy people. Following biomarkers were assessed. One, cardinal biomarkers of cellular aging: DNA damage by 8-hydroxy 2'-deoxyguanosine (8-OHdG); oxidative stress (OS) by reactive oxygen species (ROS) and total antioxidant capacity (TAC); telomere attrition by telomere length and telomerase activity. Two, metabotrophins: sustained stress response by cortisol; inflammaging by IL-6; nutrition sensing by sirtuin-1; and neurotrophins by brain derived neurotrophic factor (BDNF). Three, transcription expression profiling.

Methods: 100 patients with MDD and 120 healthy subjects were recruited in this case control study. Biomarkers were assessed by assay kits. Microarray analysis was done using Agilent 8x60K Platform and further validated by real-time PCR.

Results: Study results have shown that there is statistically significant difference in levels of cardinal biomarkers of cellular aging, metabotrophins, and three transcripts. While the levels of ROS, 8-OHdG, cortisol, IL-6 and CX3CL1 transcript were significantly increased, the levels of TAC, telomerase activity, sirtuin-1, BDNF, GPR50 transcript, and RB1 transcript were significantly

decreased in MDD patients in comparison to healthy group (all $p < 0.05$).

Conclusions: Peripheral blood biomarker levels in our results suggest significant accelerated cellular aging in MDD patients in comparison to healthy people. The cardinal biomarkers of cellular aging (DNA damage, OS, and telomere attrition) are likely mediated by changes in metabotrophins (cortisol, IL-6, sirtuin-1 and BDNF). Downregulation of GPR50, and RB1 and upregulation of CX3CL1 gene may have roles in pathways modulating cellular aging. MDD cases have accelerated aging and thus at increased risk of earlier onset of chronic and lifestyle diseases.

Keywords: Cellular aging; MDD; Major depressive disorder; Oxidative stress; Biomarker; Telomere; Telomerase; Sirtuin-1, BDNF.

- **Effect of Yoga and Meditation on Rate of Aging**

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Introduction: Apparently healthy people leading unhealthy lifestyle are susceptible to chronic lifestyle diseases due to accelerated and pathological aging and studies of yoga and meditation based lifestyle intervention (YMLI) on biomarkers of cellular aging in them are lacking.

Aim and objectives: To investigate the peripheral blood biomarkers of cellular aging in apparently people after short term YMLI. Biomarkers included 8-hydroxy 2'- deoxyguanosine (8-OHdG); reactive oxygen species (ROS) and total antioxidant capacity (TAC); telomere length and telomerase activity; cortisol, IL-6, sirtuin-1, and brain derived neurotrophic factor (BDNF).

Methods: In this randomized controlled study 84 apparently people were randomized to either YMLI (42) or routine daily life (RDL) (42) for 12-weeks. Biomarkers were measured with assay kits. All subjects were evaluated by examining the difference in cellular aging markers between YMLI group and RDL group.

Results: At 12 weeks, while the levels of DNA damage (8-OHdG) and oxidative stress (ROS), cortisol and IL6 were significantly decreased, the

levels of antioxidant capacity (TAC), telomerase activity, sirtuin-1, and BDNF were significantly increased in YMLI group compared to RDL group (all $p < 0.05$). There was strong negative correlation between the changes in cardinal biomarkers (OS, DNA damage, and telomere attrition) and metabotrophins (sirtuin-1 and BDNF).

Conclusions: Peripheral blood biomarker levels in our results suggest significant reversal of cellular aging in apparently people with YMLI. Our study is the first to show significant increase in sirtuin-1 and BDNF levels in apparently people after yoga and meditation. Therefore, yoga and meditation slow the rate of aging and lower susceptibility to complex life style and aging related diseases.

Keywords: Cellular aging; MDD; Major depressive disorder; Yoga; Oxidative stress; Biomarker; Telomere; Telomerase; Sirtuin-1, BDNF.

- **Prevention of falls in elderly**

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India as the second most populous country in the world has 76.6 million people at or over the age of 60, constituting above 7.7% of total population. 80% older people will be living in developing countries by 2050. Kerala has listed the highest proportion of elderly among all the states.

Risk factors of falls: Risk factors for falls include muscle weakness, a history of falls, arthritis, impairments in gait, balance, cognition, vision, and activities of daily living.

Consequences of falls: Falls lead to 20% to 30% of mild-to-severe injuries, and are the underlying cause of 10% to 15% of all emergency department visits.

Economic costs of falls: One third of Indian older adults aged 60 years and older live below poverty line. Private sector employees may not necessarily receive pension and retirement benefits. Fall-related injuries may affect a person's savings, increase the economic burden of caregivers, and contribute to neglect of older adults.

Prevention of falls: Awareness is critical for the success of fall prevention programmes. Assessment of fall risk factors is important to develop effective fall prevention programmes. Assessment of the home and bathroom for hazards is important. Detailed documentation of the fall event, consequent injuries, and management is important. Yoga can improve balance and gait.

Home and bathroom modifications (use of non-skid mats or flooring, bidirectional doors, improved ventilation) are important. Fall prevention must be emphasised in public health policies and health programmes for elderly people.

- **EEG biomarker to distinguish mild cognitive impairment from normal aging**

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Introduction: Mild cognitive impairment (MCI) is a prodromal stage of Alzheimer's disease (AD) which affects the elderly and has impinging socio-economic impact. Now the challenge is to distinguish cognitive decline in MCI from normal aging for the early intervention to prevent the development of AD. There is only a subtle shift of global cognitive indices in MCI from normal cognitive decline. Therefore, there is need for biomarkers to distinguish MCI from normal elderly.

Materials and methods: Twenty-eight MCI patients (mean age(SD)66.6(8)) diagnosed in the Neurology OPD, AIIMS, Delhi using Peterson criteria and twenty-five age matched controls (mean age(SD)63.5(8)) were recruited. MMSE (Mini Mental State Examination) scores were obtained. Brain activity was acquired using 128-channel EEG during eyes closed condition. EEG data was band-passed based on the individual alpha frequency method. Fifteen regions of interest based on channel locations were chosen for further analysis. Upper alpha (UA) frequency was compared between the groups with unpaired *t*-test.

Results: MMSE was not significantly different between groups. Upper alpha power was significantly lower in MCI from all the regions of interest. 11 regions (parieto-centro-frontal, left temporal, right frontal pole) showed significant difference in all the channels.

Conclusion: According to study hypothesis, behavioural results did not show any change while significant low power in UA band was observed in MCI. Therefore, we conclude that functional changes in MCI occur prior to behaviour outcome which could be used as a potential diagnostic tool.