

SESSION 4295 (PAPER)

SUPPORTING AGING IN PLACE INTERNATIONALLY

SUPPORTING OLDER PEOPLE TO AGE IN PLACE IN IRELAND: FRAILITY-RELATED HEALTH CARE USE AND OUTCOMES

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Background: Frail older people have both “depth and breadth” in their healthcare needs and require an integrated approach to service delivery but often experience poor service coordination in practice. Reforming service delivery models is a priority for this group, but the process is hindered by a dearth of evidence, particularly of current service utilisation patterns. This project aims to identify diverse service-utilisation patterns among frail older people, to examine these patterns over time and to ascertain their effect on key individual and service outcomes.

Methodology: Data were taken from The Irish Longitudinal Study on Ageing (TILDA), a prospective cohort study representing the Irish community-dwelling population aged ≥ 50 years. We sampled adults aged ≥ 65 years ($n=3,507$) in wave one (2009/11) who were classified as frail ($n=745$) on the Frailty Index (FI). FI scores of ≥ 0.25 indicated that participants were frail. Latent class analysis determined service-utilisation profiles across hospital, primary and community service indicator variables. Repeated measures cross-sectional analyses mapped transitions between service-utilisation profiles and mixed effects models determined the impact of transitions in service-utilisation profiles on health outcomes and social indicators.

Results: 24% (95% CI 23,26) of the Irish older population were frail at baseline. This group utilised 26–87% of services delivered by the Irish healthcare system. However, four heterogeneous service-utilisation profiles were identified; Non users (52%), Hospital users (20%), Community users (26%) and Community and Hospital users (2%).

Conclusions: These initial results illustrate quite diverse management strategies for frailty which occurs in the Irish healthcare system and warrants further investigation.

MAKING CAPE TOWN AN AGE-FRIENDLY CITY: AN EXPLORATORY STUDY

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Living environments characterized by infrastructural and developmental deficits hamper older citizens' integration in society for an active and healthy life. This study investigated older citizens' experience and perceptions of the “age friendliness” of their communities in the City of Cape Town.

The methodology based on the Vancouver Protocol 2006 and advocated by the WHO's project on “Age friendly Cities,” was used. Low-income suburbs of Cape Town were selected and qualitative research methods (ten focus groups with members and interviews with managers of service centres) were used to collect and analyse the data.

A sample 97 participants, mean age 70 years (range 54–83) were recruited. Eight domains constructed for the assessment of age friendliness were: physical environment,

transport, housing, social participation, respect and social inclusion, civic participation, community support and health services, and communication and information.

Barriers to social inclusion and participation were: Government restriction in income generating activities for social pensioners; features of the physical environment particularly uneven, poorly lit and unsafe sidewalks; short timing at traffic light for pedestrian-crossings; public transport services that were inaccessible to commuters with disability and younger commuters not offering their seats to them. Ageistic attitudes of personnel and the unfriendly services at public healthcare facilities were widely reported. Services and support from religious and other community agencies and travel concessions from government were valued. Lack of exposure and inability to access pertinent electronic information was a concern for a large number.

A productive and inclusive society calls for relevant stakeholders to address the concerns.

WE WORK IT OUT BETWEEN US: DYADIC HEART FAILURE SELF-CARE IN COMMUNITY-DWELLING OLDER ADULTS

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Understanding *how* older adult patient and informal caregiver dyads mutually engage in heart failure (HF) self-care is imperative to assist aging in place. We examined dyadic HF self-care in a cross-sectional mixed methods study. Self-care was measured with the Self-care of Heart Failure Index (SCHFI) comprised of maintenance (day to day care), management (symptom evaluation and response), and self-efficacy scales. Scores were dichotomized- ≥ 70 adequate; < 69 inadequate; interviews were conducted, transcribed verbatim and underwent content analysis. Data integration involved information matrices for within/across-case analyses. In 27 dyads ($n=54$), the average patient was 77 years old, male with a 64 year old caregiver (spouse ($n=15$) or female adult child ($n=9$)). Mean scores on SCHFI maintenance, management, and self-efficacy scales were inadequate (range = 54–68). Dyads engaged in self-care according to life course patterns (“*we do everything together because that's the way we are*”); and/or according to whether it was maintenance (“*I go through my routine. I weigh myself.*”); or management (in response to symptoms, the previous person responded, “*We usually call right away*”); and/or by mobilizing the help of another (“*I called my sister.*”). Dyads, where the patient or caregiver scored ≥ 70 on self-efficacy and/or management, kept their maintenance (day-to-day care) pattern despite the patient's increased symptoms. However, dyads scoring < 69 , were more likely to mobilize help. Managing aging in place for older adults with HF must involve identifying life course patterns in self-care and supplementing them as needed. This has scientific, policy, and practice implications.

CENTENARIANS IN EUROPE

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In the last decade, the number of centenarians worldwide has increased. Following this tendency, the number

of centenarian studies has also exponentially augmented. Given the complexity to conduct research with centenarians, elementary information on this specific age group remains unknown at a European level. This paper compares basic characteristics of centenarians from 32 European countries based on Census 2011. Results revealed that France is the country with higher ratio of centenarians, followed by Italy and Greece; on the other hand Croatia, Romania and Bulgaria present the lower ratio. The distribution according to gender is similar for all countries, with higher ratio of women reaching 100 years old. Different patterns of education level were found on countries where this information was reliable: Portugal and Greece are the countries with lower levels of education, with more than half without formal education; Finland, UK and Iceland are the countries with higher levels of education, with all centenarians having at least lower secondary education. Analysing the residence situation (living in the community or living in the institution), Romania, Bulgaria, Lithuania, Greece and Latvia are the countries that present higher percentages of centenarians living in the community; Iceland is the country with lower percentage of centenarians living in the community. A positive correlation between the number of centenarians and the percentage of Total Health Expenditure of GDP is observed. This study provides important information about the current profile of European centenarians, which is compared to general information on the centenarian population from EUA and Asia.

SESSION 4300 (SYMPOSIUM)

PRESIDENTIAL SYMPOSIUM: GERONTOLOGY AND METCHNIKOFF'S HYPOTHESES ON THE ROLES OF MICROBIOME AND INFLAMMATION IN AGING

Chair: V.D. Dixit, *Yale University, New Haven, Connecticut*

Co-Chair: L. Vihanski, *Weizmann Institute of Science*

Ilya Metchnikoff received the Nobel Prize for laying out the foundation of innate immunity by discovering that phagocytes and macrophages play a critical role in defense against microbes. He also coined the term Gerontology and wrote in his famous book, *"Prolongation of Life: Optimistic Studies"* that "old age can be studied by methods of exact science, and there may yet be established some regimen by which health and vigor will be preserved beyond the age where now it is generally necessary to resort to public charity". The modern science and gerontology research at the interface of immunity and metabolism are making steady progress towards Metchnikoff's prediction. Among the topics being explored are how aging is linked with inflammation? Can molecular mechanism that control inflammation of age be targeted to enhance the healthspan? Age is the greatest risk factor for chronic diseases. Data from several clinical studies suggest an association between increase in pro-inflammatory markers and emergence of age-related degenerative changes. If aging is a common trigger for multiple diseases and if inflammation is a major pathway causing morbidity and mortality, then identification of specific mechanism of inflammation that is triggered with age should delay the onset of multiple chronic diseases. Translation of such basic research discovery into practice would be a major advance in achieving

the goal of extending human healthspan. The commemorative Metchnikoff symposium will highlight various aspects of interactions between metabolism, diet and microbiota in control of inflammation and healthspan.

IMMUNOMETABOLIC REGULATORS OF AGING

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Evidence that innate immune sensor NLRP3 inflammasome links aging to functional decline supports Metchnikoff's original prediction that phagocytes or macrophages drive aging-associated degenerative diseases in an organism. Assembly of the NLRP3 inflammasome in macrophages in response to metabolic 'danger signals' controls the secretion of bioactive IL-1 β and IL-18. Here we detail a mechanism by which the macrophage-expressed Nlrp3 inflammasome controls age-related inflammation in periphery as well as brain. Ablation of Nlrp3 inflammasome protected mice from age-inflammation in multiple organs and improved their healthspan. The ketone metabolite β -hydroxybutyrate (BHB) that is elevated by caloric restriction, high-intensity exercise, or the low-carbohydrate ketogenic diet serves as an endogenous negative regulator of NLRP3-driven inflammation in aging. These studies suggest that NLRP3 inflammasome is a major driver of age-related inflammation and therefore dietary or pharmacological approaches to lower NLRP3 holds promise in reducing multiple chronic diseases of age.

IMPACT OF CIRCULATING FACTORS AND OF PERSISTENT VIROME ON IMMUNE AGING

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Adaptive immune system is in charge of precise defense against a highly diverse array of microorganisms. For defense against new infections, the organism deploys naïve, previously antigen-unexposed, T and B lymphocytes, whose antigen-specific receptors recognize, and eventually orchestrate the removal of, the invading microorganisms. Naïve B, and even more so T, lymphocytes numerically diminish with aging. However, new data suggests that those that remain appear to have maintained their functional potential, contrary to an earlier dogma. These findings refocused our attention upon cell-extrinsic defects in immunity. Results will be presented showing that aging of circulating, most likely soluble, factors, as well as changes in persistent virome, critically modulate both homeostasis and function of the aging immune system. Implications for immune rejuvenation will be discussed.

AGING CHANGES MICROBIOME AFFECTING CROSSTALK AND ACTIVITY OF MONOCYTES AND B1A CELLS

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Aging significantly dysregulates function and composition of immune cells. We recently reported that elderly humans, macaques and mice accumulate 4-1BBL+TNF+MHC class-II^{hi} CD86^{hi} B cells 1. These cells (4BL cells) are innate B1a cells activated by monocytes 2. In response to microbiota change in aging, monocytes disable the immunosuppressive