

Initial project duration – 36 months – starting from December 2018, new end date 28 February 2023, extended 12 months due to COVID-19

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e-Health and m-Health Gender Applications

Overview

Beyond biological sex, gender is increasingly recognised as a pivotal determinant of health. However, there are no standardised gender measurements. We hypothesise that gender-related factors and their effect will vary substantially between countries and diseases. The aims of GOING-FWD are to integrate sex and gender dimensions in applied health research, to evaluate their impact on clinical cost-sensitive outcomes and patient reported outcomes related to quality of life in noncommunicable diseases including cardiovascular disease, metabolic disease, chronic kidney disease and neurological disease. We also aim to construct innovative ways to disseminate the application of gender measurement towards personalised approaches to chronic disease prevention, diagnosis and treatment. As a five-country multidisciplinary Consortium with access to granular large databases, GOING-FWD is uniquely positioned to harness an innovative methodology that will provide a framework to close gender gaps in chronic disease management and promote knowledge transfer in the scientific community and clinical practice.

Progress to date

Progress to date includes identification of what are important gendered social determinants and relevant outcomes in chronic diseases. Data harmonization of multiple cohorts. Methods to share data through innovative approaches such as synthetic data and federated analyses. Capacity generation with multiple trainees in addition to those funded by GOINGFWD. Weekly knowledge exchange across international early career investigators. Knowledge translation through conference and publications. Incorporation of patient partners.

Impact of COVID-19

The study has about 6 months delay in obtaining the databases due to the closure of many centres. Due to COVID GOING-FWD has restructured work to focus on available in-house databases, as research activities were slowed down or even shut down for some time.

Team members

	Woman	Man	Other
Gender balance in the whole consortium	37 (76%)	12 (24%)	0 (0%)
Presence of women as lead researchers/PIs	6 (100%)	0 (0%)	0 (0%)
Gender Experts in the team	13 (76%)	4 (24%)	0 (0%)
Subsequent team members trained on Gender equality and IGAR	37 (76%)	12 (24%)	0 (0%)

Contribution to the achievement of UN Sustainable Development Goals (SDGs)

The GENDER-NET Plus Joint Call on Gender and United Nations Sustainable Development Goals provides a unique unparalleled opportunity to further our understanding of the impact of the intersectionality of gender-related factors on health outcomes in patients with chronic diseases in a multinational context. GOIND-FWD proposes the application of a multidimensional gender-based framework across multiple chronic disease cohorts in five countries to measure and more importantly understand sex and gender-related determinants of health outcomes contributing to patients' well-being and health system sustainability. Our aim is to consolidate sex and gender-related determinants of health and well-being knowledge in NCDs and to apply/disseminate this knowledge using technological innovations across cohorts/countries. As a Consortium, GOING-FWD will build upon the existing user and expert community in Canada to establish an international knowledge and expertise sharing platform for health care providers, researchers, and patients. GOING-FWD will endorse and embed knowledge transfer practices, including sharing and disseminating

knowledge through e-Health and m-Health applications that will actively move the measurement of sex and gender-related variables into both scientific and clinical practice.

Goal 3 – Ensure healthy lives and promote well-being for all at all ages (GOING-FWD is the sex and gender-related determinants of outcomes in non-communicable chronic disease).

Goal 5 – Achieve gender equality and empower all women (GOING-FWD is promoting mentorship for young men and women to foster awareness that researchers need to apply unbiased sex and gender-relevant approaches in providing answers to research questions).

Differences/inequalities between women and men highlighted by the project

We have provided evidence that beyond sex, gender-related factors do matter when it comes to patients' outcomes, and we explored the magnitude of such effect across different countries and culture. For example: 1) A global study that showed how institutionalised gender was positively associated with the male:female ratio reported cases of coronavirus disease 2019 (COVID-19) among countries that report sex-disaggregated data. (Tadiri CP et al. The influence of sex and gender domains on COVID-19 cases and mortality. *CMAJ*. 2020 Sep 8;192(36):E1041-E1045). 2) A study that leveraged two large national public health surveys representative of the countries' respective populations to investigate the gendered impacts of social factors on self-reported health and access to care and to determine if these influences vary by country. Canadians and Austrians reported high perceived health and low levels of unmet healthcare needs, however biological sex, many social determinants and their interactions with sex contributed to explaining these outcomes, implying gendered impacts of social determinants of health and access to care. (Tadiri CP, et al. Determinants of perceived health and unmet healthcare needs in universal healthcare systems with high gender equality. *BMC Public Health*. 2021 Jul 31;21(1):1488). 3) A study showing that individuals with characteristics typically ascribed to women reported poorer cardiovascular health and higher risk of heart disease, independently from biological sex and baseline CV risk factors, in Canada and Austria. Female sex exhibited better CV health and a lower prevalence of heart disease than male in both populations. However, gender factors and magnitude of gender impact varied by country. (Azizi Z, et al. Sex, Gender, and Cardiovascular Health in Canadian and Austrian Populations. *Can J Cardiol*. 2021 Aug;37(8):1240-1247).

Positive impact of the project on gender equality/scientific evidence on gender in the field

An interdisciplinary approach will be used to integrate sex and gender considerations across the age continuum in relation to physical and mental health. Anticipated impacts include education/training, policy, and risk estimation considering gender. Such ground-breaking work will inform the design of gender-responsive interventions to prevent, diagnose, treat and improve health outcomes across non-communicable diseases. Expected short term outputs include:

- Education/training: establish specific sex and gender-sensitive education modules that will be country/region specific.
- Sex and gender informed guidelines/policy: to prevent, diagnose, treat and improve outcomes across NCDs.
- e-Health and m-Health gender applications: for researchers, health care providers and policy makers.
- A long term outputs is for personalised technologies to prevent, diagnose and treat NCDs: apply learnings to develop tailored sex and gender specific interventions for NCDs management that are cohort/country specific.

Socio-economic impact; involvement of policy makers/civil society

The PIs of GOING-FWD are advocating for promoting a sex and gender unbiased approach in clinical research to foster gender equity in health.

Publications

Raparelli V, Norris C and Pilote L. Meet the Methods series: Methods for Prospectively and Retrospectively Incorporating Gender-Related Variables in Clinical Research. Issue 4 – July 2021. <https://cihr-irsc.gc.ca/e/52608.html> // cihr-irsc.gc.ca/e/documents/igh_mms_i4_gcr-en.pdf

Azizi Z, Shiba Y, Alipour P, et al. Importance of sex and gender factors for COVID-19 infection and hospitalisation: a sex-stratified analysis using machine learning in UK Biobank data. *BMJ Open* 2022;12:e050450. doi:10.1136/bmjopen-2021-050450