



2020 Gender Summit Global for SDGs (GS19)

The Book of The Abstracts



THE ELSEVIER
FOUNDATION

How does the gender gap work (and why does it matter)?

Academic career, productivity and public funds for science in Argentina.

Florencia Fiorentin^{1,2}, Mariano Pereira^{2,3}, Diana Suarez^{2,3}

¹PhD Fellow CONICET, Argentina, ²Instituto de Industria-Universidad Nacional de General Sarmiento (Idel/UNGS), Argentina, ³Centro Interdisciplinario de Estudios de Ciencia, Tecnología e Innovación (CIECTI), Argentina

Keywords: *Gender gap, productivity gap, S&T public funding, Matilda effect*

1. Summary

This paper is framed under Science and Technology (S&T) policy and gender studies. We provide evidence to explain the impact of the productivity gap on the probabilities of accessing S&T public funds for the Argentinean case.

2. Relevance

Female researchers have lower levels of productivity and recognition by peer than men. The bias against women negatively impacts quality, diversity and level of knowledge production. Hence, closing the gap is a matter of key importance to development. We contribute to the characterization of the productivity gap and the process of accessing public funding for S&T for a developing country. We also provide policy criteria to reduce and avoid the bias.

3. Aims & Objectives

We postulate the following research question focused on measuring the relationship between the process of accessing public funding and the productivity gap.

RQ: Is there gender bias in the impact of publications on being awarded with public funds for science?

We provide better understanding of these dimensions of the gender gap and policy criteria to manage and even avoid it.

4. Methods

We study the Argentinean most important S&T public program: “Scientific and Technological Research Projects” (PICT) in the period 2003-2015. We combine PICT’s administrative data with bibliometric information from SCOPUS and employ a dynamic probit model. The estimations include the population of researchers that have ever applied to the grant and all their bibliometric history indexed by SCOPUS (7451 researchers and 14415 observations).

5. Results

Previous evidence confirms the Matilda effect: women are almost 7 percentage points less prone to being awarded by PICT than men. Our results show that women must publish approximately 14 more papers and receive 9 more citations per year to have the same probability of being awarded than men. This evidence confirms the productivity gap and the Matilda effect. Meanwhile the level of additional publications and citations required to close the gap is impossible to reach.

6. Conclusions

Results indicate the need to change evaluation systems to fight the gender bias in public funding, by means of explicit policy measures designed to close the gap, linked to the academic practices and the evaluation system, based on bibliometric techniques. Transforming the evaluation system and the academic practices are the key to reach the 5th SDG about gender equality by reducing the gap in the S&T system.

7. Contact details: Florencia Fiorentin: fflorentin@campus.ungs.edu.ar, Mariano Pereira: mpereira@ciecti.org.ar, Diana Suarez: dsuarez@campus.ungs.edu.ar

Integration of the gender perspective in mathematics at university level. Yes, we can!

Irene Epifanio, Lara Ferrando

Universitat Jaume I, Spain

Keywords: *equality, gender mainstreaming, STEM gap, statistics, university degrees*

1. Summary

Gender gap in STEM is important. We show how gender perspective can be implemented in mathematics at university. The ideas also serve for lower levels. This connects with the priority topic of Gender Summit Global “Advancing human well-being” (relevant SDGs: 4 and 5).

2. Relevance

Few works deal with this, and less at university level. We show how gender perspective was integrated at a subject about Statistics and Numerical methods in Industrial Design Engineering degree at Jaume I University.

3. Aims & Objectives

Various laws oblige the integration of a gender perspective in university teaching. However, the reality is that in the vast majority of subjects there is no effective incorporation of the gender perspective. In this work we show how it has been carried out.

4. Methods

We focus on aspects such as: the adequate management of the classroom (promoting an equal participation); the visibility of the contributions of women in these areas (with different activities, ranging from quotes to escape rooms); the use of an inclusive language (in all levels, oral, written, etc. note that no textbook uses inclusive language, so material was prepared); the methodology through active teaching (learning by doing mathematics, working in cooperative groups, by projects, etc.); the contents (showing the importance of adequate sampling, the adequate questions in order to see all the visions, i.e. to show the importance of taking into account gender in engineering through data); the work in values by humanizing the problems (some activities were about discrimination, climate change, etc.); the use of the computer; an appropriate evaluation (the final exam was only 55% and diversity and different problematics because the pandemic was taken into account); and, above all, interpersonal relationships, where empathy is essential as well as breaking with stereotypes and implicit biases. For example, one activity about the use of confidence intervals presenting the effect John-Jennifer can be seen at <https://www.youtube.com/watch?v=RSkQELAzgIc>.

5. Results

After the final exam, the anonymous opinion of the students was collected, and 100% were very satisfied. Most of the statistical projects in the subject were about social issues, and in particular, gender discrimination, which were carried out by men. Note that students could select the theme freely, and one of the variables that was used is Gender. Some examples of titles of projects are: “Are contraceptive methods really used?”, “The role of women in the Spanish series of the s. XXI”, “The wage gap in basketball”, “Hours invested in sports throughout the week between men and women”.

6. Conclusions

There is no reference to equality in syllabus of the vast majority of mathematics subjects of all the world's universities. However, teachers, also math teachers, must contribute to the knowledge and development of Human Rights, democratic principles, the principles of equality between women and men, of solidarity, of environmental protection, of universal accessibility, and promotion of the culture of peace.

7. Contact details: epifanio@uji.es

Gender, Labour Markets and Public Action in Argentina, Brazil, Colombia and Mexico

Author: Sandra Bustamante, PhD

Universidad de Belgrano, Buenos Aires, Argentina

Keywords: *Latin America, Feminization, labour markets, inequities*

1. Summary

Even when female visibility in the economic domain increased in some Latin American countries (Argentina, Brazil, Colombia and Mexico), inequities still exist. In this research, with an innovative theoretical corpus we show the evolution of women in the labour market during the period 2009 - 2019, the public policies implemented, and how diverse actors made advocacy to change this situation.

2. Relevance

Nowadays, a great deal of literature as well as international campaigns (with different views about how power, privilege, choice and agency play out in the marketplace), highlight the extremely exploitative terms on which most women take up paid work and contest the view that increased access to paid work has been empowering for women.

3. Aims & Objectives

The main objective is to analyze the situation of women in the labour market in some middle-income countries of Latin America and the need to take certain public actions to improve the real empowerment of women, considering how market forces are restructuring women's position within their families and the wider society and evaluating various forms of public action (public policies, corporations and civil society) in those countries.

4. Methods

Regarding the Methodology, it is qualitative and quantitative. The methodological strategy designed focuses on a comparison between Argentina, Brazil, Colombia, and Mexico for the period 2009 – 2019 considering several indicators and sources. The Qualitative strategy includes some interviews to representatives of Ministries of Labour, corporations and CSO's.

5. Results

Much of the gap observed between the countries, especially in rural areas, is associated with a greater insertion of Latin American women in precarious jobs. These are characterized by monetary non-remuneration and high levels of informality, which implies low income, job instability, lack of protection and absence of rights. Other important result is the lack of childcare centers and preschool services, extended hours schools, the availability of senior care services. Likewise, it has been shown that balanced and non-transferable maternity and paternity leave contribute to promoting co-responsibility in the home to overcome gender stereotypes, empower women and facilitate their labor insertion.

6. Conclusions

The reality is that, although women represent slightly more than half of the population in Latin America, their contribution to economic activity, growth and well-being in the region is well below their potential. In fact, the evidence shows that the Gross Domestic Product (GDP) of Latin America and the Caribbean would grow an additional 16% if the gender gap in the labour market were closed completely. However, much remains to be done and success will depend on governments, businesspeople and civil society joining these efforts.

7. Contact details: Sandra Bustamante, sandra.bustamante@comunidad.ub.edu.ar or sabustamante@gmail.com

Setting up the award for female researchers and organizations supporting female researchers' activities

F. Ezaki, D. Okada, H. Fujii, R. Matsumoto, Y. Araki, M. Nakamura and M.O.Watanabe

Japan Science and Technology Agency, Japan

Keywords: *science for well-being, gender equality, promoting active participation of female researchers*

1. Summary

We would like to introduce our efforts to promote the active participation of female researchers and gender equality with setting up the awards program. (relevant SDGs: Goal 5) It includes an attempt to inspire the younger generations.

2. Relevance

Although the proportion of women in all researchers in Japan is on an increasing trend year by year, it remains low at 16.6% (as of the end of March 2019) compared to other nations.

3. Aims & Objectives

We are making efforts to promote the active participation of female researchers and realize gender equality.

4. Methods

As part of our efforts to promote the active participation of female researchers, we set up the awards program: The Brilliant Female Researchers Award (The Jun Ashida Award) in 2019. The award has two categories; one is for female researchers aged under 40 in principle working on outstanding research that contributes to a sustainable future society, and the other is for progressive organizations carrying out initiatives contributing to greater involvement of female researchers, serving as a model for other organizations. The Ashida Fund established by the late fashion designer Jun Ashida cooperates to provide a supplementary prize of 1 million yen (approx. 10,000 USD).

5. Results

During the very first application period from April 1 to June 30, 2019, we received 104 applications from female researchers and 12 applications from the organizations supporting female researchers. After a screening by a selection committee consisting of external experts, the winners of one Brilliant Female Researcher Award (The Jun Ashida Award) and one Organization Supporting Brilliant Female Researchers Award (The Jun Ashida Award) were decided upon. Moreover, we specially set up the Brilliant Female Researcher Award (The JST President Award) this time because there was an awardee who was equally eligible to win the Brilliant Female Researcher Award (The Jun Ashida Award). At the awards ceremony, we also held a talk session with the participation of the award winners and high school students. The award winners spoke frankly about their lifestyles, reasons for becoming a researcher, study abroad experience and so on. It seems that it was a good opportunity for young audience to think about their own future and some students gave us passionate feedback such as “the options of my future have just expanded”, “my dream is to become a researcher and my goal has taken shape”.

6. Conclusions

We have just started this award program and are grateful to receive applications from a lot of promising researchers. We try to continue this program to commend and encourage female researchers.

7. Contact details: Fumiko Ezaki, Daijirou Okada, diversity@jst.go.jp

Fostering healthy and sustainable organizations with a gender perspective: women leaders' positive personal resources

Mónica Segovia-Pérez¹, Laritza Machín-Rincón², Eva Cifre², Pilar Domínguez-Castillo³, and Pilar Laguna-Sánchez¹

¹ Universidad Rey Juan Carlos, Spain, ² Universitat Jaume I, Spain, ³ Universitat de Valencia, Spain

Keywords: *psychological capital; women leaders; work-family conflict; sustainable organizations*

1. Summary

Through healthy and sustainable work environments perspective, the study will shed a light on women leaders' health (SDGs5, 3, 8), underlining the importance of multidimensional relationships between work environments, personal life, and individuals' well-being.

2. Relevance

Advancing for healthy organizations and a sustainable life-work relationship, this study expands the knowledge about the impact of women leaders' personal resources (PsyCap) on managing their perceived conflict between work and family roles and on their own well-being.

3. Aims & Objectives

A gender perspective is needed to understand sustainable management. Within occupational health psychology, to date, no study has focused on the importance of personal resources such as psychological capital (PsyCap) in buffering the effects of work-family conflict (WFC) in women leaders. To fill this gap, this study aims to analyze the mediation role that work-family and family-work conflict plays between psychological capital and well-being (engagement and burnout) when moderated by the number of children. To cope with the inter-role conflict when work and family demands are mutually incompatible, women leaders, in comparison with their male counterparts, use a set of personal resources of these processes, which provides these women with the energy, motivation, persistence, self-empowerment and self-monitoring in taking on exigent responsibilities and pursue their goals.

4. Methods

Data were collected from an online survey sent to 46 professional and occupational associations. A sample with 220 women leaders was obtained. The questionnaire consisted of a Psychological Capital scale and Work-Family scale. A conceptual model with nine hypotheses was tested with moderated mediation analysis using Model 14 four times in the PROCESS tool for SPSS (version 25).

5. Results

The main contribution of the study was the inclusion of PsyCap as a whole: personal resource is an antecedent of work well-being. The results clearly show that PsyCap acts as a protective personal resource of women leaders' work well-being by decreasing burnout when they perceive WFC and have children.

6. Conclusions

Women leaders draw on PsyCap (hope, self-efficacy, resilience, and optimism) in order to cope with the perceived WFC and avoid the consequential negative impacts on their work well-being. Even though the PsyCap enables women to avoid the negative consequences of the WFC on workplace well-being, it is a priority that working conditions (or organizational policies) promote actions to eradicate such conflict that decreases occupational health and increases inequality and gender gap. As an unpostponable action to foster the SDGs, economic, political and social interventions must be done to promote conciliation and co-responsibility policies for achieving gender equality, increasing well-being and advancing healthy companies.

7. Contact details: Mónica Segovia Pérez, monica.segovia@urjc.es

Sex and Gender Difference in Overlap Syndrome of Functional Gastrointestinal Disorder and the Effect of Genetic Polymorphism

Nayoung Kim^{1,3*}, Ju Yup Lee^{1,2}

¹Department of ¹Internal Medicine, Seoul National University Bundang Hospital, Seoungnam, South Korea; ²Department of Internal Medicine, Keimyung University School of Medicine, Daegu, South Korea; ³Department of Internal Medicine and Liver Research Institute, Seoul National University College of Medicine, Seoul, South Korea;

Keywords: *Functional gastrointestinal disorder, overlap, functional dyspepsia, irritable bowel syndrome, non-erosive esophagitis*

1. Summary

Coexistent gastrointestinal symptom profiles and prevalence or associated factors for the overlap among non-erosive reflux disease (NERD), functional dyspepsia (FD) and irritable bowel syndrome (IBS) remain unclear. As little is known about sex or gender differences among patients with over functional gastrointestinal disorders (FGIDs) therapeutic approach is rather difficult.

2. Aims & Objectives

To evaluate the clinicodemographic features of NERD, FD, and IBS and their overlaps in the view of sex and gender difference and to assess the risk factors including genetic polymorphisms for NERD-FD-IBS.

3. Methods

Data collected from 494 FGID patients and 239 controls visiting the outpatient clinic of Gastroenterology at Seoul National University Hospital in Korea. Diagnostic criteria of FGID were based on the Rome IV. Risk factors including genetic polymorphisms of neurotransmitters (*SLC6A4 5-HTTLPR*, *GNB3*, *ADRA2A*, *CCKAR* intron, and *TRPV1*) and cytokines (*TNFA*, and *IL10*) were evaluated.

4. Results

In FGID the number of women (n=284) was higher than that of men (n=210). Among NERD (n=304), FD (n=308) and IBS (n=180), the prevalence of NERD was significantly higher in men and that of FD was higher in women. Among overlap of FGIDs (n=239) and non-overlap FGID (n=255) overlap was more prevalent in women compared to non-overlap FGID. Anxiety and depression scores were higher in overlap FGID ($P = 0.012$ and $P < 0.0001$, respectively). The symptoms of FGIDs such as early satiation, postprandial fullness, and epigastric pain were more frequent and the intensity scores of the symptoms were higher in the overlap FGIDs compared to the control group and non-overlap FGID ($P < 0.0001$). In women, the severity of symptoms was higher in the non-overlap FGID than in the control group ($P < 0.0001$). Polymorphism of *IL10* 592C>A was associated with the occurrence of male IBS and male NERD-IBS and *SLC6A4 5-HTTLPR* was associated with female NERD-FD-IBS ($P = 0.024$)

5. Conclusions

Patients with overlap FGIDs should be a focus of attention due to their association with anxiety/depression and more severe symptoms, especially in women. Genetic polymorphisms seem to be pathophysiological factors of overlap FGID. (UN SDGs: Advancing human well-being 1)

6. Contact details: Nayoung Kim, nakim49@snu.ac.kr

Sex omission and male bias are still widespread in cell experiments

Jun Yeob Kim¹, KyoungMi Min¹, Hee Young Baik², and Suk Kyeong Lee¹

¹ Department of Medical Life Sciences, Department of Biomedicine & Health Sciences, College of Medicine, The Catholic University of Korea, Republic of Korea

² Department of Food and Nutrition, Seoul National University, Republic of Korea

Keywords: *Cell, Sex description, Sex omission, Male bias, Cell experiment*

1. Summary & 2. Relevance

Sex is an important biological variable, but it has not received sufficient attention in basic and preclinical studies. Recently, international funding agencies and renowned journals are trying to integrate sex as a variable in every research steps.

3. Aims & Objectives

We wanted to see whether researchers' perception for cell sex has improved as a result. We examined the sex notation of the cells in all the articles published in AJP-Cell Physiology in 2018.

4. Method

Sex notation was also analyzed by cell species and type and source in the article.

5. Results

Of the 107 articles reporting cell experiments, 50 articles (47%) reported sex of the cells, while 57 articles (53%) did not. Among the 50 articles with sex description, 17 articles (34%) used both male and female cells in the study, while 23 articles (46%) used male cells only and 10 articles (20%) used female cells only. We found that almost all researchers were indifferent to the sex of the cell lines they used. The sex information of some commercially available cell lines was readily available in web sites, but the researchers rarely described it. Meanwhile, 64% of articles showing data from primary cells reported the sex of the cells. Sex omission was more frequent for human primary cells than for non-human primary cells. Researchers reported sex of the primary cells more faithfully when they isolated the cells by themselves than when they purchased the cells. In articles describing experiments using rodent primary cells, only about 15% used both male and female cells. Whereas over half of the studies showing data from either mouse or rat primary cells used only male cells revealing evident male bias.

6. Conclusions

Our survey show that sex omission and male bias is still prevailing in cell experiments. Integrating sex as an important biological variable is imperative to enhance the accuracy and reproducibility of cell-based studies which provide basic information for subsequent preclinical and clinical study design. Our research showing male bias in cellular experiments is related to UN sustainable development goal 5 'Gender Equality'.

7. Contact details: Suk Kyeong Lee, sukklee@catholic.ac.kr

Why are boys falling behind? Explaining gender gaps in school attainment in Sri Lanka

Rozana Himaz¹ and Harsha Aturupane²

¹Oxford Brookes University, United Kingdom ²World Bank, USA

Keywords: Education, Gender gaps, discrimination, Sri Lanka, South Asia

1. Summary

This paper looks at gaps in schools attainment disfavoring boys in Sri Lanka to find that although teacher attitudes and parental aspirations are significantly lower for boys, they do not sufficiently explain the attainment gap. Much of it remains ‘unexplained’ and is due to differences in *returns* to endowments, possibly due to positive discrimination of men in the labor market and bottle necks in higher-education.

2. Relevance

An increasingly common trend in middle income countries such as Thailand, South Africa, Malaysia, Indonesia and Sri Lanka is that females outperform males in terms of attainment at school and enrollment in higher education. Moreover, in countries such as Sri Lanka and Thailand, households seem to allocate significantly higher resources towards girls' education compared to boys’.

3. Aims & Objectives

The key aim of the paper is to see the extent to which parental aspirations, teacher characteristics such as gender, attitudes and experience, and differences in school characteristics can explain gaps in mathematics scores between boys and girls in grade seven (aged 12) in Sri Lanka. The paper also looks at post-compulsory education to investigate gender-based asymmetries in enrollment, the youth labor market and the higher education system.

4. Methods

The paper uses decomposition analysis using parametric and non-parametric techniques to understand what explains gaps. The data come from a panel that follows seventy two schools in 2012 and 2016. It includes student, teacher, household and school-level surveys. Probit estimation and descriptive statistics are used to understand enrollment in post-compulsory education. This uses the 2012/13 Household Income and Expenditure Survey collected by the Department of Census and Statistics.

5. Results

The paper finds that although teacher attitudes and parental aspirations are significantly lower for boys, these factors do not sufficiently explain the attainment gap. Much of the gap remains ‘unexplained’ and is due to differences in *returns* to endowments. With regard to enrollment in education beyond compulsory schooling, the paper finds that on average the probability of a male being enrolled is 2 percent smaller than that of a female. We also find that foregone earnings as a result of engaging an extra year at school matters significantly more to males than it does to females with a higher average marginal effect of opportunity cost of 1 percent.

6. Conclusions

Positive discrimination of men in the labor market and bottle necks in higher-education may be important in understanding the ‘unexplained’ gap in school attainment. This emphasizes the need to look beyond school level interventions to address the issue of gender imbalances in attainment. Relevant SDGs:4, 5, 10.

7. Contact details : Rozana Himaz,, rhimaz@brookes.ac.uk

Analysis of the 2030 Agenda in relation to violence against women in the Latin American context

Silvia Gas Barrachina

Jaume I University

Keywords: *femicides, Latin America, SDGs, gender equality, strategies*

1. Summary and 2. Relevance

Violence against women and girls constitutes a more widespread and persistent violation of human rights. In this sense, femicides constitute a group of crimes against humanity that contain the crimes, kidnappings, and disappearances of girls and women. They are the most extreme and visible form of violence that comes from structural violence and persists in androcentric society. According to data provided by the UN in Latin America and the Caribbean the highest rates of femicide are found.

3. Aims & Objectives

For this reason, it is important to develop measures aimed at ending feminicides, particularly in the Latin American context. The objective is to analyze the SDGs proposed in the 2030 Agenda in relation to the eradication of feminicides in Latin America, to evaluate the process carried out, identify new measures and how to improve and implement effective practices.

4. Methods

The method consisted of analyzing the goals and indicators proposed in the 17 SDGs of the 2030 Agenda, as well as the measures and actions implemented in relation to the eradication of femicides.

5. Results

- About the elimination of forms of violence against women (5.2, 16.1, 16.2) no reference is made to femicides.
- The strategies are dedicated to the set of laws, regulations, policies and equality plans (5.6, 16.3, 16.10) but it is not enough.
- The Spotlight Initiative. In Latin America (Argentina, El Salvador, Guatemala, Honduras, México, Ecuador) is focusing on ending femicide by implementing strategic interventions that protect victims and collect information. Preventive strategies based on gender equality education needs to be implemented.
- Montevideo Strategy. Design and implement training and education plans on gender equality, in all public institutions. Promote measures, policies and programs for the full participation of children, youth and men as allies strategies for achieving gender equality. But it is necessary to apply an educational program based on gender equality in small towns and for men.

6. Conclusions

Femicides are still present even though progress has been made in the regulations to eradicate violence against women. For this reason, it is necessary to include femicides in the goals of the SDGs and to develop concrete preventive strategies for Latin America and the Caribbean. It is necessary that these actions be implemented a) in contexts where the highest rates are found, b) on a small scale (local communities), c) to develop educational plans on gender equality (that includes the LGBT community, indigenous women and activists), c) it is important that the educational plans are specifically aimed at the subjects who commit these actions (children, youth and men).

7. Contact details: Silvia Gas Barrachina, sylviabarrachina@gmail.com

Gender differences in the risk of cerebrovascular disease according to health-care utilization and medication adherence of newly treated hypertensive patients in Korea

Jiae Shin^{1*}, Dongwoo Ham², Sangah Shin³, Hee-Young Paik⁴, Hyojee Joung^{1,2}

¹ Department of Public Health Science, Graduate School of Public Health, Seoul National University, Korea

² Institute of Health and Environment, Seoul National University, Korea

³ Department of Food and Nutrition, School of Food Science and Technology, Chung-Ang University, Korea

⁴ Centered for Gendered Innovation in Science and Technology Research (GISTeR), Korea Federation of Women's Science & Technology Associations, Korea

Keywords: *Gender differences, health-care utilization, medication adherence*

1. Summary

Sex/gender is related to biological differences and health behaviours affected by culture and society. Investigation of any difference in disease treatment or health-care utilization between men and women is the first key step to accomplish gender equality in health (SDGs: 3, 5, 10).

2. Relevance

The result of sex/gender approach in health-care utilization using medical big data can be used as scientific evidence for personalized medicine which could reduce inequality of health area between men and women.

3. Aims & Objectives

This study aimed to investigate gender differences in the risk of cerebrovascular diseases (CBD) according to health-care utilization and medication adherence among newly treated hypertensive patients using a nationwide data.

4. Methods

We analyzed the National Sample Cohort version 2.0 of the National Health Insurance Service. Newly treated hypertensive patients aged ≥ 20 were extracted from those who received health examinations during 2003–2006 without pre-existing CBD. A total of 22,956 patients diagnosed as hypertensive with medication were selected for analyses and followed for 10 years. Cox proportional hazards multivariate regression model was used to investigate the associations of CBD with health-care utilization, how to use the medical service such as amount of out-of-pocket expense, frequency of visits to health-care providers, location and type of health-care providers, or with medication adherence after adjusting for known confounders for CBD.

5. Results

Incidence rates (/1,000 person-years) of CBD were 23.2 in men and 29.1 in women. The patients who visited tertiary/general hospitals only (relative risk [RR]=1.61, 95% confidential intervals [CI] 1.46–1.78) and >12 times/person-year (RR=4.74, 95% CI 4.42–5.09), used more out-of-pocket expense/person-year (RR=1.34, 95% CI 1.22–1.47), or showed non-medication adherence (RR=1.68, 95% CI 1.58–1.78) had increased risk of CBD in both men and women. However, compared to men visiting 4–12 times/person-year (frequency of visits recommended by guideline), men patients visiting >12 times/person-year (RR=5.37, 95% CI 4.84–5.94) showed a greater risk of CBD than women equivalents (RR=4.27, 95% CI 3.88–4.70; ratio of RR [RRR]=1.26, 95% CI 1.09–1.45). The risk of CBD decreased significantly only in women visiting <4 times/person-year (RR=0.88, 95% CI 0.783–0.996) and in the medium tertile of out-of-pocket expense/person-year (RR=0.83, 95% CI 0.74–0.93).

6. Conclusions

Health care utilization and medication adherence were associated significantly with the risk of CBD in both men and women, and gender differences in the risk of CBD according to health care utilization were observed in newly treated hypertensive patients.

7. Contact details: Hyojee Joung, hjjoung@snu.ac.kr

Designing a Lumbar Corset for the Elderly Based on Body Shape Characteristics: A Gender Comparison

Jooyeon, Lee ¹, Yunja, Nam ^{1,2}, Jinhee, Park ³ and Juyeon, Park ^{1,2}

¹ Dept. of Textiles, Merchandising and Fashion Design, Seoul National University, Korea

² Research Institute of Human Ecology, Seoul National University, Korea

³ Dept. of Fashion Industry, Incheon National University, Korea

Keywords: Lumbar corset, chronic low back pain, elderly, 3D body shape, health and well-being

1. Summary

The present study was conducted to identify the gender factors applicable to the design of a lumbar corset for the elderly reflecting their different body sizes and shapes. Chronic musculoskeletal diseases such as low back pain are highly related to not only the physical issues of the elderly but also their mental and social problems; therefore, this effort was intended to respond to the perspective of Goal 3. Good Health and Well-being of the Sustainable Development Goals.

2. Relevance

Due to their age-related bodily changes, elderly people tend to experience discomfort when wearing products designed for mass consumers (Lee, 2003), often imposing physical complications in them. Specifically, for gender, chronic back pain is more frequently found in elderly females than elderly males due to their weakened bone strength as observed in the higher prevalence of osteoporosis (Bressler et al., 1999; Edmon & Felson, 2003). Given so, Bok & Ahn (2014) suggested that, in order to provide effective back support to elderly females, a lumbar corset should be correctly aligned with the body parts and should give compression at the appropriate areas.

3. Aims & Objectives

To the authors' best knowledge, there is, to date, no research to understand gender-specific needs for the lumbar corset design. Therefore, we aimed to propose a lumbar corset design reflecting the differences in body size, shape, and preference for each gender.

4. Methods

The body sizes relevant to wearing a lumbar corset were analyzed based on 437 3D body models (221 males and 216 females) aged 70-85, which data were retrieved from the 6th Size Korea (KATS, 2014). Additionally, in-depth interviews were conducted with 11 people (5 males and 6 females) at the age of 65 years or higher to analyze the user experiences of wearing lumbar corset products available in the current market.

5. Results

The size analysis showed that the circumference measurement items did not differ between elderly males and females, but the height measurement items showed significant differences between the gender groups ($p < .01 \sim .001$). In particular, the occurrence of breast ptosis in elderly females suggested the smaller center front height for a lumbar corset, as compared to elderly males. The interview narratives showed that elderly females felt higher discomfort with the size of the current lumbar corsets, especially due to pricking under the breasts and anterior pelvic area. Based on the results, we developed patterns for a lumbar corset specific for each gender. The lumbar corset for elderly females was adjusted to the height of the front fastener and the position of the support, resulting in a U-shaped corset, while that for elderly males looked almost horizontal (or slightly ∩-shaped).

6. Conclusions

This study identified gender-specific considerations for the design of lumbar corsets. The findings of this study set a foundational ground for the manufacturing process and size system for the lumbar corset that could be used by elderly people as an effective wearable means for back support. Particularly to improve the health and well-being of elderly females vulnerable to chronic musculoskeletal conditions (e.g., osteoporosis), this study offers practical insights into the design of lumbar corsets to consider their unique physical characteristics, which is to satisfy SDGs Goal 3.

7. Contact details: Juyeon, Park, juyeon.park@snu.ac.kr

REHABILITATION SERVICES FOR WOMEN IN DISTRESS: A CASE STUDY OF BANGALORE CITY

Dr. K Annapuranam, Institute for Social and Economic Change, Bangalore, India.
Email: annapuram@isec.ac.in

ABSTRACT

Rehabilitation services for distress women who encountered violence is imperative because the violence against women is significantly increased, and adverse effect excludes them from the mainstream society. While such exclusion takes place in many forms, the intricacy of issues poses challenges to the functionaries and stakeholders who are involved in rescue and rehabilitation services. This paper looks at the complexities in delivering services from the perspective of feminism. The interviews were conducted with officers and beneficiaries from five rehabilitation centres in Bengaluru city, draw attention to key driving forces of distress those are located within the deep rooted gender attitude and institutional arrangements of social relations. The way in which institutionalized power operates in delivering services, and the interrelated aspects of institutions, distressed women, and parents, are embedded within and shaped by various socio-economic and cultural factors. However, the cooperation between various stakeholders enables the system function smoothly, but inadequate support from the police, parents and social network excludes victims from the mainstream society. Most importantly, the term 'distress' needs nuanced understanding in the framework of the legal system because multiple realities often suppresses victims instead of ensuring speedy process of rehabilitation services and justice.

Keywords: *Distress, Women, Rehabilitation, City*

“I wouldn’t know what to do with the breasts”: The impact of gender on clinical skills education.

Marina Politis¹, Megan El Brown², and Camille Huser³

¹University of Glasgow, Scotland ²Hull York Medical School, England ³University of Glasgow, Scotland

Keywords: *medical education, clinical skills, gender equality, gender equity, gender awareness,*

1. Summary

This study is appropriate to the theme of the Gender Summit, as it falls under the priority topic of advancing human wellbeing – healthcare often viewed through an androcentric lens - labelling men the ‘norm’ and othering women. Our study encompasses SDGs 3,4,5 and 10 - good health and wellbeing, quality education, gender equality and reduced inequalities, as it focuses on medical education, which is formative in creating future doctors who may alleviate both health inequalities and wider social inequalities.

2. Relevance

This work was important, as in the last decade, deaths of more than 8200 UK women could have been prevented had they received the same standard of care as men and doctors’ gender awareness can contribute to equity and equality within healthcare. Given this, medical education is an important site for developing gender-awareness and sensitivity - by identifying whether differences in confidence and comfort exist when examining patients of different genders, and reasons behind these, strategies may be designed at individual and institutional levels to overcome gender disparities within clinical skills education, which may thus reduce gender disparities in clinical care.

3. Aims & Objectives

This study aims to explore how medical students experience learning clinical skills in relation to patient gender and whether they feel equally prepared for clinical interactions with male and female patients.

4. Methods

The research adopted a socio-constructivist ontology and interpretivist epistemology. An online survey (n=90) and semi-structured focus groups (n=10) were conducted with a self-selected sample of medical students to explore their levels of confidence/comfort in different examinations on males and females and a constructivist thematic analysis was undertaken using Braun and Clarke’s framework.

5. Results

The greatest difference in confidence was in cardiology exams, with over 70% of students more confident on males. Only 20% of students felt they had enough exposure practicing on women in medical school, versus 90% on men. The thematic analysis revealed two main themes: (1) barriers to effective learning and (2) facilitators of effective learning, with the subthemes of males as standard, difficulty navigating breasts, tutors perpetuating negative attitudes, intersectional identities and a wider sociocultural issue; and relating to patients, role as a professional and gender blindness respectively.

6. Conclusions

This study identified a difference in confidence and comfort when examining men versus women, important for presentation at the Gender Summit as there are tangible solutions to this issue if an awareness of it is fostered. Recommendations for change are opportunities for equal practice on men/women, gender-sensitive training for tutors/staff, and the promotion of resources featuring all genders. Medical education must move away from an entrenched andronormative status quo to best serve patients of all genders.

7. Contact details: Marina Politis, 2364733P@student.gla.ac.uk

Village savings and loans associations contribution to agriculture, food security and gender equality in the South Kivu province, in the Congo democratic Republic

Masheka Bercky Zihindula and Nabintu Eloise Bujiriri

¹ISDR Kaziba and ACTORS, DR Congo ²ACTORS, DR Congo

Keywords: *Village Savings and Loans Associations, ACTORS, Food security, Gender equality and Finance agriculture*

1. Summary

This paper adopted the synergy approach among the Sustainable Development Goals one, two and five. In the lenses of this approach the addressed the contribution of village savings and loans associations to finance agriculture, to secure members 'household food and to reinforce gender equality.

2. Relevance

The so described extreme poverty in Sub-Sahara countries affects mostly women especially in rural areas. Non-Government Organizations have resorted to Village savings and loans approach to assist vulnerable persons to cope with the harsh living conditions. However, there little evidence on how this approach has impacted groups members' lives relating with agriculture, food security and gender inequality. This paper was trying to address this gap.

3. Aims & Objectives

The aim of this paper is to assess the impact of village savings and loans associations to finance agriculture, to secure members 'household food and to reinforce gender equality.

4. Methods

Since 2016, we created and observed the development of 253 village savings and loans associations in the South-Kivu, in eastern Democratic Republic of Congo. We submitted a questionnaire to 1825 members from the 253 saving groups and the same questionnaire was repeated to the same respondents each year to assess their improvement relating to finance agriculture, secure household food and improve gender equality. At the end of the project in 2019, 120 persons who did not adhere to any village saving and loan associations were selected to participate to this study. A propensity score matching approach was used to analyze the data collected.

5. Results

We found an increased rate of women adhesion to saving group (73.33%) compared to their pair men. This was explained by the important role of women to improve agricultural activities, to procure and secure food in their household and improve the household gender equality. A large number of members of saving groups (99.17%) were able to access and control loans contracted from their groups. Saving groups helped women save and get loan to finance agriculture, secure household food and gain new household roles they did not have before their adherence to saving group. Whereas, those who were not yet members of any saving group did not reach the same improvement compared to the former. They associated these difficulties to lack of financial capital. We also found that women were able to improve their social life by building new relationships and network via saving groups.

6. Conclusions

This research demonstrates that village saving and loan approach helps those living in poverty to secure and stabilize their living conditions. However, there is need for the implication of all stakeholders: government decision-makers, Non-Government Organization and formal financial institutions to assist saving groups towards the accomplishment of the sustainable development objectives. The study found more a synergy rather than trade-off between the SDGs. All the participants of this study were pursuing the SDGs 1,2 and 5 as their major aim in adhering to saving groups.

We acknowledge the UK Overseas Aid & Development Commission that granted fund via the UK charity "This Is EPIC" to implement the 253 saving groups where this research was based on.

7. Contact details: Masheka Bercky Zihindula, bzihindula@gmail.com

Sex differences in energy metabolism and gut microbiota composition in diet-induced obesity

Ji-In Yoon¹ and Mi-Kyung Sung¹

¹ Department of Food and Nutrition, Sookmyung Women's University, Seoul 04310, Republic of Korea

Keywords: *obesity, sex differences, estrogen, energy metabolism, gut microbiota*

1. Summary

Sex differences in obesity have been mostly attributed to sex hormones such as estrogen. In this study, our data identified the possibility of non-estrogenic effects on sex differences in energy metabolism.

2. Relevance

Obesity is caused by an imbalance in the energy metabolism, and in particular by sex, shows a distinct difference in phenotype and metabolic regulations. These differences have been mostly attributed to sex hormones, however, recent development in genomic analysis tools have inferred that genes which are located on the sex chromosomes may play a role.

3. Aims & Objectives

We aimed to determine estrogen-dependent and estrogen-independent sex differences in energy metabolism and gut microbiota composition and to identify molecules responsible for these differences.

4. Methods

Three groups of seven weeks-old C57BL/6J mice (sham-operated males, sham-operated females and ovariectomized females) were fed high-fat diet for 10 weeks to induced obesity, and then sacrificed. Energy metabolism biomarker determination, and gut microbiota taxonomic profiling analysis were conducted.

5. Results

The percent increase in body weight and the amount of adipose tissue of males were significantly higher than those of females, however, ovariectomized females weighed similar to males. Adipose tissue inflammation was also higher in both males and ovariectomized females than sham-operated females. Molecular biomarkers in adipose tissue indicated that males and ovariectomized females had higher expression of proteins associated with lipogenesis than sham-operated females, while proteins associated with lipolysis showed opposite results. Interestingly, fasting blood glucose and insulin were higher and circulating adiponectin concentration was lower in males compared to those in both female groups. Adipose tissue protein expression of PI3K, Akt and GLUT4 confirmed that the male's insulin sensitivity were significantly lower compared to that of females in both groups. The analysis of fecal microbiota composition showed that the alpha-diversity in males is significantly lower than sham-operated females, and female ovariectomy triggered the distribution of microbiota similar to males. In addition, there were a number of taxa showing sex-dependent difference in their proportion which were either estrogen-dependent or estrogen-independent.

6. Conclusions

Non-estrogenic effects may contribute to sex differences in energy metabolism and gut microbiota composition. Genomic profiling to identify gene networks responsible for sex differences in obesity is currently under investigation. The results of this study can be used as a scientific basis to establish gender-specific strategies to prevent and treat obesity contributing human well-being. (relevant SDGs: 1, 4, 5, 6, 16, 17)

7. Contact details: Ji-In Yoon, wldlshi@naver.com) and Mi-Kyung Sung mksung@sookmyung.ac.kr

How can we ensure equal access to healthcare for women and girls in Rural and Remote Australia?

Addressing urgent questions of gender in health through a needs analysis survey examining accessibility to life-saving point-of-care-ultrasound (PoCUS)

Nayana Parange¹, Amber Bidner¹, Eva Bezak^{1,2}

¹Allied Health and Human Performance, University of South Australia, Australia

²University of Adelaide, Australia

Keywords: *Point-of-care-ultrasound (PoCUS), antenatal, healthcare, rural and remote*

1. Summary

Within Australia, the maternal mortality ratio of women in ‘very remote’ and ‘remote’ areas is estimated to be almost 1.5 times that of women living in urban areas. The perinatal mortality per 1,000 births in ‘very remote’ areas is doubled compared to all other regions. Inaccessibility of health services, inadequate or infrequent antenatal care are reported risk factors for infant mortality and named amongst the main drivers for the failed ‘close the gap’ initiative.

2. Relevance

Many life-threatening problems for the mother and her baby can be recognised on antenatal ultrasound, and most often, interventions can be applied to prevent mortality and morbidity, but there is a shortage of skilled personnel to diagnose these problems to be able to manage them effectively, and the extent of inequity in access to life-saving ultrasound services for women is not currently known.

3. Aims & Objectives

To perform a national antenatal Point of Care Ultrasound (PoCUS) needs analysis survey to:

1. Investigate the availability, accessibility and utilisation of antenatal ultrasound in rural Australia.
2. Explore the perceptions and opinions of rural healthcare workers regarding:
 - a) The availability and utilisation of antenatal ultrasound.
 - b) Their interest in and ability to access PoCUS training opportunities.

4. Methods

Using a peer developed, validated and piloted survey tool, a national PoCUS needs analysis survey was conducted. The national survey targeted clinicians from rural regions throughout all of Australia’s States and Territories zoned RA4 and RA5 under the Australian Remoteness Area (ASGS-RA 2016) system. This Australia-wide survey explored availability and utilisation of ultrasound services and equipment, and the accessibility of these services to women in rural communities. The perception and attitudes of the rural healthcare workers were explored including interest in and barriers faced accessing CPD and training opportunities.

5. Results

120 Survey responses were received. Preliminary results revealed that 40% of the health clinics did not use ultrasound in antenatal care. Those clinics that offered ultrasound relied on health professionals that visited intermittently to deliver services. Of the 88.3% responders on the importance of ultrasound in prenatal care, 94% agreed/strongly agreed that ultrasound was essential. Of the clinics that provided ultrasound, 25% had equipment that was older than 5 years. Data from 75% of clinics suggested that women had to travel distances anywhere from a minimum of 3 hours to a maximum of 2 or more days to access ultrasound services. 76% health practitioners expressed interest in training, of which 94% were willing to travel outside their community to obtain training.

Health practitioners’ perceptions of barriers preventing pregnant women from accessing and utilising antenatal ultrasound services were identified as : Ultrasound considered unnecessary by the women and/or practitioners; long distances to reach ultrasound service; no transport available; cost of travel; cost of the scan; no child care options for children at home; unable to get time off work; lack of family support; convenience of appointment times.

6. Conclusions

Gender inequity in health exists even in developed countries like Australia. Various barriers such as physical, cultural, geographical as well as issues with infrastructure, technology, logistics and financing exist for women in rural and remote areas. To build capacity and strengthen equitable health systems to meet the needs in women’s antenatal health care, policy makers need to ensure that coordinated, multilevel strategies are employed in healthcare systems and services. This project addresses SDG 3: Good Health and Well-being, SDG 5: Gender Equity, SDG 10: Reduced inequality and SDG 11: Sustainable Cities and Communities.

7. Contact details Associate Professor Nayana Parange, Nayana.Parange@unisa.edu.au

‘What’s Cooking in that Bag from South Africa?’ Cross-Pollinating Innovations, Women Empowerment and the Cooking Transition

Olivia Muza^{1,2} and Pamela Bigirimana^{3,2}

¹ACE-ESD, Rwanda², ³ARC Power

Keywords: *Sub-Saharan Africa, Socio-Cultural Empowerment, Disruptive Innovation, Energy Transition, Gender*

1. Summary

Clean, modern cooking solutions often fail to generate sufficient demand at the end user level. Previous studies have focused on supply side and techno-centric factors (such as subsidies, markets, designs and production).

2. Relevance

Cooking is deeply cultural. Socio-cultural acceptability (technological realities, norms and practices) influences adoption of clean, modern cooking solutions.

3. Aims & Objectives

The purpose of this study is to establish the cultural drivers of the cooking transition in sub-Saharan African communities. The non-electric heat retention cooker (*Wonderbag* or *Lambamoto*) a South African energy efficiency innovation is used as a case study.

4. Methods

We use information collected from in-depth interviews with 20 women users/buyers (in rural and urban areas of South Africa, Rwanda and Zimbabwe). The interviews were conducted between January and March 2020.

5. Results

We find 13 emerging energy cultures with positive environmental, social, economic and health impacts influencing adoption.

6. Conclusions

A culture centric utility model for increasing the non-electric heat retention cooker adoption and its policy implications are discussed.

7. Contact details: Olivia Muza, oliviamuza@gmail.com

Gender Factors in Addiction Studies

Youjin Lee¹, Jung-Rok Lee², Heisook Lee³, Hye Sun Gwak⁴, Jeong Yee⁴, Yeon Yu⁵, and Sang Beom Jun^{1,6}

¹Department of Electronic and Electrical Engineering, College of Engineering, Ewha Womans University, Seoul, Korea

²Division of Mechanical and Biomedical Engineering, College of Engineering, Ewha Womans University, Seoul, Korea

³Center for Gendered Innovation in Science & Technology Research, Seoul, South Korea

⁴College of Pharmacy and Graduate School of Pharmaceutical Sciences, Ewha Womans University, Seoul, South Korea

⁵Researchers of the Center for Gendered Innovation in Science and Technology Research, Korea

⁶Department of Brain & Cognitive Science, College of Scranton, Ewha Womans University, Seoul, Korea

Keywords: *gender factor, addiction, sex, systematic review*

1. Summary

It is well known that there are clear gender differences in addictive behaviors. In this study, we attempted to analyze the previous addiction research considering gender differences to find out which gender factors have been included or excluded in the humans or animals studies. This study is connected to SDG 3, good health and well-being, and SDG 5, gender equality. This is because our study aims to identify gender effect on addiction studies and it is deeply related with our health and gender equality.

2. Relevance

In the addiction studies, the biological sex difference is mainly considered as a gender factor even though there exist various gender factors such as environmental and sociocultural factors as well as neurobiological ones. In addition, due to the difference in available experimental approaches, difference gender factors have been investigated in human and animal studies for addiction.

3. Aims & Objectives

The primary goal of this study is to identify the gender factors associated with addiction in humans and animals, respectively. Then, we aim to propose which gender factors can be newly adopted to the human or animal studies in addiction.

4. Methods

All relevant studies about gender differences in addiction were searched using the PubMed databases. The PubMed search engine was used with the following keywords: gender AND addiction. The studies in both human and animals were included, and the papers published in 2010–2019 and 2015–2019, respectively, were considered for systematic review. After excluding the review articles, data from the selected papers were extracted into summary tables containing the following information: considered gender factors, types of addiction, and results whether gender differences in addiction exist or not.

5. Results

In cases of human studies, various gender factors were considered such as an income level, employment status, race, education level, family composition, and marital status. For animal studies, biological factors distinguishing sex rather than gender were mostly considered. For instance, hormonal, genetic and neurobiological differences were mainly studied. There was also a difference in the selection of addiction types between human and animal studies. Not only drug addiction, but also game, internet, smartphone, and SNS addiction have been recently studied in human. On the other hand, animal studies focused on drug addiction. A variety of drugs were covered from accessible drugs such as nicotine and alcohol to fatal and illegal drugs such as amphetamine and morphine. Drugs dealt in human studies were limited because of legal issues. Using special experimental design such as animal gambling task, gambling disorder test could be conducted, but not often.

6. Conclusions

It is necessary to design various animal experiments considering gender factors rather than simply about sex differences. This is because research on animal subjects has many factors that can be artificially controlled or analyzed. Especially, addiction is highly affected by social factors. For example, there is a gender differences in seeking help for addiction. Women were more likely to endorse negative attitudes toward treatment than men.

7. Contact details: Youjin Lee, iamugin@gmail.com

Analyzing the gender composition of research screening committees in South Korea

Son, Ju Yeon¹, Shin, Sukkyung²

¹ Chungnam National University, South Korea, ²National Research Foundation of Korea, South Korea

Keywords: *evaluation committee, R&D Research Program, gender composition, gender balance*

1. Summary

There has been relatively less interest in balancing gender composition of research committees in science & engineering field, particularly in South Korea. Whereas promoting gender equality and empowerment in scientific research is related to one of the 17 SDGs, the importance of these issues is not well recognized or understood among scientists. Therefore, it is necessary to research on the degrees of gender inequality in S&E research program and to make scientists aware of this issue.

2. Relevance

A wide range of different policies has been introduced to enhance and promote women scientists in last 20 years in Korea. However, women scientists still face various obstacles to pursue their career track and they have relatively less chance to participate in research committees including screening committees, research evaluation committees and research planning committees.

3. Aims & Objectives

We try to find the degree of gender inequality in composition of research committees, especially R&D program screening committees, after that we identify gender issue related to research committees. In addition, we analyze the reason why women scientists less participate in these committees and the effect of women's low participation rate.

4. Methods

First, we examined the gender imbalance in committee members by analyzing the last 10 years-candidates-data for the committees of NRF basic research programs in science & engineering. Second, we conducted survey to find the reason why women scientists participate less in these committees and the difference of participation behavior between researchers' gender.

5. Results

The analysis shows that women's participation rate of committee members has increased since 2010. Despite this improvement, however, we found gender gap between committee members in comparison with women researchers' rates in science & engineering field.

6. Conclusions

There needs to be more attention to women scientists' career development. These include not only preventing career breaks but also accumulating various experiences as a researcher and taking part in research committee as an expert.

7. Contact details: Son, Ju Yeon, doit4nephy@cnu.ac.kr

Performance evaluation of AI speaker service for the elderly

JiYeoun Lee¹ and Hee-Jin Choi²

¹Department of Biomedical Engineering, Jungwon University, Korea. ²Department of Electrical Engineering, KAIST, Korea.

Keywords: Artificial intelligence, AI speaker, elderly, speech recognition, well-being

1. Summary

Performance evaluation of artificial intelligence(AI) is needed for reproductive healthcare services, information and education of the elderly(SDG 3).

2. Relevance

Smart devices with voice interfaces are actively being developed, but in most systems, the performance of speech recognition tends to deteriorate due to interfaces that do not consider elderly.

3. Aims & Objectives

The objective of this study is to make manual to evaluate the performance of AI speakers implemented by inputting the voice of the elderly into 5 types of AI speakers that are currently in use.

4. Methods

The manual deals with the establishment of an environment for the recognition and processing performance evaluation of AI voice recognition speakers that are rapidly and spreading. Although the voice recognition performance evaluation method for indoor service robots (KS B6970:2015) stipulates the test environment in the indoor service environment of robots equipped with voice recognition systems, it is different from AI voice recognition speakers located in a specific location based on network environment. Therefore, this document presented a performance evaluation environment referring to the actual use environment.

5. Results

The speech set domain for voice input was analyzed in the main areas of use of AI voice recognition speakers on the market and determined to be five areas (music, transportation, life/information, schedule/alarm, and other). A common domain and specialized domain were derived and each 40 (common domain) and 4 (special domain) sets of ignition were constructed.

6. Conclusions

The voice recognition system for the elderly may be used in many areas of the fourth industry in the future, such as the elderly helper/treatment/healing robot, healthcare devices for the elderly. It is suitable for the purpose of SDG 3(Ensure health lives and remote wellbeing for all at all ages). By developing a system that considers elderly, the ripple effect is expected to reduce unconscious gender bias.

7. Contact details: Prof. JiYeoun Lee, jylee@jwu.ac.kr

FemaleINSPIRES - International Network and Support Platform for Interdisciplinary Research Engineers and Scientists: a Case Study

Anna Bogush¹, Evi Viza², Michele Cano², Farida Akiyanova³, Michelle Afrifah⁴, Zeinab El Maadawi⁵, Theresa Mkandawire⁶, Esther Phiri⁶, Intan Suci Nurhati⁷, Sarah Olanrewaju Anyanwu⁸

¹Centre for Agroecology, Water and Resilience, Coventry University, UK; ²University of the West of Scotland, UK; ³International Science Complex Astana, Kazakhstan; ⁴Ghana Technological University College, Ghana; ⁵Cairo University medical school, Egypt; ⁶Malawi Polytechnic, Malawi; ⁷Research Center For Oceanography, Indonesian Institute of Sciences (LIPI), Indonesia; ⁸Abuja University, Nigeria

Keywords: *gender imbalance in STEM, female STEM Early Career Researchers, COVID-19 pandemic, academia and research institution*

1. Summary

Gender imbalance across the Higher Education, particularly for early career researchers (ECRs) has been amplified by the current pandemic. This has an impact on equality and economic development on a global scale.

2. Relevance

The gender imbalance in science, technology, engineering, and math (STEM) fields has remained constant for years despite numerous initiatives and increases the further up the STEM career pipeline one looks. This imbalance is universal and ever present to a varied degree. Women regardless of motherhood, are still disproportionately affected by caring and housework responsibilities. Within STEM, where females are already underrepresented and they hold less senior management roles, this is simply widening an existing gap. Academia and research institutions are no exceptions to this reality. The global COVID-19 pandemic has negatively impacted the careers of women in STEM to a great extent. It was shown that COVID-19 has affected negatively the research output of female academics (Flaherty, 2020), exacerbating the already reported gender gap in higher education institutions (Kempenaar and Murray, 2015). Goodwin and Mitchneck (2020) noted that “The pandemic will negatively impact the careers of women in STEM, particularly those of colour, and failure to respond could jeopardize years of progress toward faculty equity”.

3. Aims & Objectives

The project “FemaleINSPIRES” has been funded recently by Royal Academy of Engineering under the Engineering X Pandemic Preparedness grant scheme (EXPP2021\1\184). The main goal of this project is to create an online international support platform for female STEM Early Career Researchers from the DAC countries.

4. Methods

This project will research the barriers faced by and identify support needed for ECR across DAC countries. We are going to run an online survey to collect data on challenges and solutions that women STEM ECRs face in light of the current pandemic, and beyond. The online workshops dedicated to help in ECR professional career development and their emotional well-being will be delivered. Topics will include “Identifying sources of funding”, “Collaborative and multidisciplinary working”, “Publicising your research”, “emotional well-being in crisis”. Also, sessions within each participating institution/country to raise awareness in grass root level in each locality will be organised. The project will involve international STEM academics, researchers and professionals within different maturity in their careers, who will have the roles of mentors for female STEM ECRs. A dedicated website will be the host for the activities. Writing retreats, mentoring, peer review of research proposals and development of collaborations will be outputs of the work.

5. Conclusions

It will strive to provide peer to peer support with focus on Malawi, Ghana, Indonesia, Egypt, Nigeria and Kazakhstan in the first step and then explore expanding this initiative globally. The results and impact of the work to be undertaken have direct link with the SDGs 5 (Gender Equality) and 10 (Reduced Inequalities), and it relates to SDGs 9 (Industry, Innovation and Infrastructure) and 17 (Partnerships for the Goals).

6. Contact details: Anna Bogush, ad2855@coventry.ac.uk and Evi Viza, evi.viza@uws.ac.uk

Gender mainstreaming from the Policy Support System SDG-PSS lens for monitoring the enabling environment and achieving SDG6 in Tunisia

Olfa Mahjoub¹, Abderrahman Ouasli², Narjess Hamrouni³, Guillaume Baggio Ferla⁴, Manzoor Qadir⁴

¹ National Research Institute for Rural Engineering, Water, and Forestry (INRGREF), Tunisia

² Bureau of Planning and Hydraulic Balance (BPEH), Tunisia

³ Office of Rural Women Outreach (BEFR), Tunisia

⁴ United Nation University, Institute for Water, Environment and Health (UNU-INWEH), Canada

Keywords: SDG6, SDG-PSS, Gender component, evidence-based, policy

1. Summary

Gender is one of six critical components of an evidence-based Policy Support System (SDG-PSS) developed to monitor the progress of a given country, in this case Tunisia, toward achieving the SDG6 by 2030. Contextualization of the SDG-PSS is meant to measure the enabling environment and allow policy-makers planning for sustainable progress and accelerated SDG implementation.

2. Relevance

Tunisia has several challenges to overcome in the water sector, therefore setting realistic goals and prioritizing the SDG6 targets based on national context and country-specific indicators are recommended. Despite the country's advances in addressing gender in the water sector, gender segregated data are still missing for setting evidences of SDG6.

3. Aims & Objectives

This work is meant to highlight the opportunity and the preliminary results of using the SDG-PSS in addressing Gender component in Tunisia, among five pilot countries, and monitoring its progress toward achieving SDG6 after contextualization of this tool. The study highlights gender related existing gaps and achievements with regard to SDG6 in Tunisia.

4. Methods

In Tunisia, a multisectoral group of experts representing the main R&D institutions, research, and civil society involved in the water sector are working on the contextualization of the six components of the SDG-PSS, including Gender, according to the orientation of the national water policy and its future trends. Introduction of data into the SDG-PSS produces a summary view and several reports for interpretation.

5. Results

Preliminary results showed that gender approach is poorly understood while means and tools for its mainstreaming are currently insufficient. Even though, there is a large amount of gender disaggregated data based on the population census results 2014. With respect to the water sector, few women are members of water users' associations (3-4%) and, as a result, they are excluded from decision-making despite the key role they play in water supply and water management in the household and farm operations. Women receive few opportunities for education and income-generating activities. Their activities are insufficiently diversified and exclude them from the decision-making realm.

6. Conclusions

The SDG-PSS did show that Tunisia did progress on several aspects related to gender. It allowed a strong collaboration between all the water actors. Gender data disaggregation did reveal the gaps that need to be filled and the opportunities that the country need to take to progress on implementing SDG6.

7. Contact details: Olfa Mahjoub, olfama@gmail.com

Gender Inclusive Engineering Education

Eunjeong Ma¹, Heisook Lee², Mi-Hye Kim³

¹Department of Creative IT Engineering, Pohang University of Science and Technology, South Korea, ²Center for Gendered Innovation in Science & Technology Research, Ewha Womans University, South Korea, ³Department of Computer Science, School of Computer Engineering, Chungbuk National University, South Korea

Keywords: *gendered innovations, engineering education, engineering curricula, gender dimension*

1. Summary

It is well researched that sex and gender bias can be socially harmful and lead to missed opportunities in science and technology research. In light of improving gender inclusiveness in science and technology fields, we have attempted to better understand how gender and sex dimensions are included or excluded in engineering education.

2. Relevance

The integration of gendered innovations, i.e., the methods of sex and gender analysis, into research, applications, and education can lead to excellence in basic science, applied engineering, medicine, policy, practice, and organizational culture.

3. Aims & Objectives

The primary goal of the research is to find out how gender and sex bias operates in engineering education. Based on the findings, we aim to propose how to better design gender inclusive engineering curricula by incorporating diverse values.

4. Methods

We have employed a qualitative research method such as focus group interview. We have selected 15 interviewees in total based on gender, nationality, and disciplines, all of who have been teaching in engineering schools either in Korea or in Asia. The interviews were done twice in 2017 and in 2019. The first interview was conducted with 7 participants from China, Japan, and Korea, and it took place in China. For the second interview we recruited 8 people from various engineering schools in Korea. We have used semi-structured interview questions in order for the participants to freely express thoughts and exchange ideas among them. One of the researchers presided over the interviews with minimal interventions, and all conversations were recorded under the permission of the interviewees.

5. Results

We have analyzed the interviews using content analysis, and picked out major keywords and themes. Three main questions were delivered to the interviewees regarding whether they had experience to integrate gender or sex into their teaching. We have found that the integration of gender into engineering curricula is correlated with various factors such as science, technology, and education policy, seniority, discipline, structural issues at the university level, research experience, and the like. For instance, faculty members at the assistant level feel that they have very little leverage about what and how to teach, and gender is not prioritized unless either the university or the government imposes upon them to do so. On the other hand, the more research experience about gender is accumulated, the stronger they feel the need to incorporate gender into engineering education.

6. Conclusion

It is imperative to re-design engineering curricula by incorporating gender and sex dimensions, considering the impacts of engineering on humans and society. To do so, it is necessary that both individual engineering faculty members and the government along with the university work in concert to build the education culture and practice to include gender. In conclusion, we believe that gender inclusive engineering education will contribute to advancing human well-being (relevant SDGs: 4, 5, 16).

7. Contact details: Eunjeong Ma, eunjma@postech.ac.kr

An Exploratory Examination of Various Support Plans about Women's Pregnancy, Childbirth, and Child Care : Focusing on Several Related Organizations

Youngjoo Nam¹, Hee Young Paik², Sun Wha Ok¹, Seongsu Ku³

¹ College of Human Ecology, Seoul National University, Korea

² The Center for Gendered Innovations in Science and Technology Research, Korea

³ Hanam-city Public Health Care Center, Korea

Keywords: *support plans, material support, informational· educational support, emotional support*

1. Summary

We reviewed various supports by five representative organizations striving to increase the birth rate and reduce child care difficulties.

2. Relevance

Based on the fact that Korea has the lowest birth rate among the OECD member nations, we studied the various support policies and plans relating to women's pregnancy, childbirth, and child care.

3. Aims & Objectives

We studied what kind of supports are provided to women and children by various organizations and analyzed the similarities and differences between them.

4. Methods

We examined the policies of the Ministry of Gender Equality and Family, the Ministry of Health and Welfare and the Ministry of the Interior and Safety, tackling low-fertility/aging society. In addition, we researched several advocacy strategies of the Hanam-city public health care center and the Korea population, health and welfare association, which represent the government delivery system. Finally, we checked the support plans of the local medical center, Mizmedi Hospital.

5. Results

There are three types of support policies for pregnancy, childbirth and child care: material support, informational and educational support, and emotional support. Regarding material support, there are voucher systems that provide nutrition supplements and medical checklist for pregnant women. For informational and educational support, advice for pregnancy(e.g. the description of the pregnancy stages, precautions during pregnancy, subfertility), child development, parenting skills, day care centers, and the application for the material support are given, as well as several family life education programs including preparing for childbirth and for parenting during various stages of child development. Emotional aspects consist of counseling or therapy for prepartum-postpartum depression. In summary, material aid and informational support are provided by government organizations more frequently; on the other hand, emotional support is usually offered in local medical centers. When pregnancy is confirmed, material and informational support are given automatically and freely. However, women must dedicate time and money if they seek counseling. Increasing the amount of this emotional assistance will significantly improve the quality of life of pregnant women, as pregnancy and motherhood lead to dramatic changes in one's identity and everyday life.

6. Conclusions

The results of this study suggest several points that should be considered when planning solutions for low birth rates. Policy makers should design effective policies that do not interfere with but rather complement the deficiencies of other policies. Moreover, policy researchers and policy makers need to develop policies based on the described needs of the beneficiaries. By doing so, a more effective and integrative support system would be established, along with the foundation of inclusive, safe and sustainable communities and cities. Thus, all society members as well as women can promote well-being and enjoy healthy lives(SDG 3, 5, 11).

7. Contact details: Youngjoo Nam, profnyj@naver.com

Sex/Gender Differences in the Effect of Lipid-Lowering Agents on Dementia Risk

Mi-Young Kim, Hyejin Jee, Sooyoung Shin, Sukhyang Lee and Yi-Sook Jung

College of Pharmacy, Ajou University, Suwon 16499, Korea

Keywords: Cognitive decline; HMG-CoA reductase inhibitors; ischemic heart disease; gender differences

1. Summary

The present study performed in Asian Cohort suggests that appropriate use of lipid-lowering agent considering sex differences may provide beneficial strategies for the risk for dementia. Considering the benefits of statins on dementia risk, the gender differences in response to statin therapy, the racial inequalities in global health represent and the global partnerships needed to advance the benefits of statins for everybody, our study may be related to not only SDG3 and SDG5, but also SDG10 and SDG17.

2. Relevance

Several studies have revealed a significant link between IHD and dementia, and the development of effective methods to reduce the risk of dementia in the IHD population is clinically important. However, since most studies have not focused on the IHD patient population, it is not known whether statin use in these patients can have a beneficial effect on the risk of dementia. Furthermore, the effects of statins are known to have racial differences, but there are few studies especially on developing countries. Therefore, a better understanding of sex-related issues is essential to provide beneficial treatment strategies for men and women, respectively.

3. Aims & Objectives

The aim of this study was to investigate the association between statin use and dementia risk in elderly Korean patients with IHD across seven commonly prescribed statins in view of sex, age, and exposure duration differences.

4. Methods

This study is a retrospective cohort study based on medical information collected from the Korea Health Insurance Review and Assessment Service (HIRA) claims database. From January 1, 2007 to December 31, 2015, 264,036 elderly patients over 65 years of age with IHD history were classified as statin users, and the risk of developing dementia in the group was evaluated by gender.

5. Results

Among the 264,036 eligible patients aged ≥ 65 years with IHD, statin users were compared with non-users by propensity score matching at a 1:1 ratio (71,587 in each group). The primary outcome was dementia risk by estimating hazard ratios (HRs) and 95% confidence intervals (CIs). Differential risks of dementia were assessed by sex in the subgroups of statin types, exposure duration, and patient age, implying that sex is an influential factor for the link between statin use and dementia incidence. Among seven commonly prescribed statins, rosuvastatin was associated with the greatest preventive effect on dementia incidence, with an adjusted HR of 0.82 (95% CI = 0.78-0.87). In a subgroup analysis organized by sex, the differential risk of dementia incidence was assessed in each statin group, implying that sex is an influential factor for the link between statin and dementia.

6. Conclusions

Our study demonstrated that statin therapy was associated with a reduction in dementia risk in Korean patients with IHD. The beneficial effects of statins were varied according to sex differences. This suggests that patients with IHD can reduce their risk of dementia using a particular statin. Clinician should consider the apparent differences in statin efficacy between sexes, as well as types of statins. The use of appropriate statin types with regard to sex differences may provide a relatively inexpensive way to reduce the burden of dementia. The present study may be related to SDG3 in that it enhances the benefits of statins for all people, including men and women, ADG5 because of gender differences in response to statin use, SDG10 because it targets Asians who are currently lacking in statin studies, and SDG17 in that global partnerships are needed to advance the benefits of statins for everybody.

7. Contact details: Yi-Sook Jung, Ph.D, visjung@ajou.ac.kr

Biomarker Differences between Genders in Korean Diabetes Mellitus patients

Min Seob Kim¹, Hyun Seok Choi¹, Moxin Wu¹, JiYeon Myung¹, Eui Joong Kim¹, Yong Sung Kim², Han-Seung Ryu², Suck Chei Choi², Tae Yang Yu³, Se Eun Ha⁴, Seungil Ro⁴ and Moon Young Lee¹

¹ Department of Physiology, Digestive Disease Research Institute, and Institute of Wonkwang Medical Science, School of Medicine, Wonkwang University, Iksan, South Korea

² Department of Gastroenterology, Digestive Disease Research Institute, School of Medicine, Wonkwang University, Iksan, South Korea

³ Department of Endocrinology, Digestive Disease Research Institute, School of Medicine, Wonkwang University, Iksan, South Korea

⁴ Department of Physiology and Cell Biology, University of Nevada School of Medicine, Reno, Nevada, USA

Keywords: Type 2 diabetes, mir-10a/-10b, menopause, estrogen

1. Summary

Type 2 diabetes has rapidly increased in prevalence in Asian populations and the prevalence of type 2 diabetes is increasing in Korea as well. The incidence of type 2 diabetes was higher in men than in women and increased with age. Interestingly, there are more male patients with diabetes before age 45, with this pattern being reversed after age 45, with more female patients showing diabetic phenotypes.

2. Relevance

Previously, we demonstrated that miR-10b-5p deficiency in cells expressing the receptor tyrosine kinase KIT leads to the degeneration of β cells in the pancreas and interstitial cells of Cajal in the gastrointestinal tract. Injection of a synthesized miR-10b-5p mimic into mice with diabetes and gastroparesis lowered and maintained healthy blood glucose levels, improved gastrointestinal functions, and reversed the gastroparesis phenotype. We also found that the KO effect of mir-10b in mice is sex-dependent. Male mir-10b KO mice show profound effects and develop diabetes but female KO mice have little change occur.

3. Aim & Objectives

We hypothesized that the difference between male and female for mir-10a and mir-10b in diabetes would be mediated by estrogen. Thus, we aimed to demonstrate the quantitative difference of several plasma diabetes markers between male and female in Korean Diabetes Mellitus Patients and healthy control.

4. Methods

We analyzed 100 patients and 40 healthy participants blood samples taken from biobank in Wonkwang University Hospital. Fasting insulin and C-peptide was measured by ELISA technique. For mir-10a and mir-10b measurement, a TaqMan probe-based qPCR assay was performed. The comparative cycle threshold method was used to compare relative transcription levels and the transcription level of each miRNA was estimated as the relative fold-change over the control genes.

5. Results

In the ovariectomy model, β -estradiol was significantly reduced concomitant with the lesser expression of miR-10a and 10b compared to control. There were significant increases in the plasma concentration of HbA1c, glucose, C-peptide and Insulin from the plasma in both of male and female Korean Diabetes Mellitus Patients compared to each healthy control. However, there were significant decrease in the relative expression of miR-10a and mir-10b between male and female in the patients as well as in the healthy control. Additionally, relative expression of miR-10a and mir-10b was significantly higher in the female healthy than male healthy control. Among the female healthy controls, over the age of 50 years old showed the higher expression of miR-10a and mir-10b than below the 50 years old.

6. Conclusions

These results suggest that there are significant differences in the expression of miR-10a and mir-10b between female and male as well as between before menopause and postmenopause women. Therefore, diabetes might be protected by estrogen via mir-10a and mir-10b, and in situations which estrogen decreases, such as menopause, these protective effects are lowered with simultaneous decrease of mir-10a and mir-10b.

7. Contact details: Moon Young Lee, lmmy6774@hanmail.net

A study on alcohol policies considering gender perspective

Jung JeKarl¹

¹ Department of Health Convergence, Ewha Womans University, Seoul, Republic of Korea

Keywords: *alcohol policies, gender-specific, increased alcohol use among women, public health priority*

1. Summary

Alcohol abuse contributes to 3 million deaths each year globally, accounting for 7.1% and 2.2% of the global burden of disease for men and women, respectively. Reducing alcohol abuse has become a public health priority of the WHO (Goal 3.4 & 3.5 of UN SDGs). As alcohol use among women is increasing, considering gender when developing alcohol-related policies may contribute to reductions in the overall population deaths, reductions in the burden of disease and improvements in quality of life.

2. Relevance

Since women consume less alcohol than men, alcohol-related policies have focused on men or have been gender-neutral. However, it is necessary to develop effective gender-specific alcohol-related policies, as alcohol consumption among women is increasing, and accordingly, it is predicted that alcohol-related harms will also increase among women.

3. Aims & Objectives

This study aims to describe why gender should be considered in alcohol-related policies and to propose gender-specific alcohol-related policies.

4. Methods

This study was conducted by reviewing the literature, such as studies to identify trends and factors of women's alcohol use, and studies on effective alcohol policies based on evidence.

5. Results

It was predicted that direct harm, including health effects and indirect harm to others due to alcohol use, will increase and that multidimensional policies will be needed to prevent and reduce alcohol abuse. From a gender point of view, alcohol policies were proposed to ensure that biological differences (sex) would not be perceived as social discrimination (gender), to include both direct harms experienced by one's own alcohol use and indirect harms to others who consume alcohol, and to prioritize policies that have been proven to be effective. Alcohol policies were proposed in six areas: providing information on health effects and disease burdens due to biological differences, and developing gender-specific preventive messages; training to improve literacy; developing gender-specific screening, brief interventions, and treatment programs; increasing taxes and prices on alcohol and restrictions on its availability to reduce alcohol consumption; enforcing restrictions on gender-targeted promotion in alcohol advertising and media; reducing harms to others; reducing the between-group differences in alcohol-related harms among groups of women; establishing policies and leadership to prevent and reduce alcohol-related harm among women; and expanding research on gender-related perspectives on alcohol use.

6. Conclusions

In Korea, there are a lack of policies to prevent and reduce alcohol-related harm, and gender-neutral policies exists despite the increase in alcohol use among women. Therefore, there should be gender-specific policies and evidence-based studies that consider the determinants of alcohol use among women, especially social psychological characteristics.

7. Contact details: Jung JeKarl, ablajung@naver.com

Potential of Agroecology in Ensuring Food Security and Building Resilience amongst Women in Kenya

Mary Nyasimi, PhD

Inclusive Climate Change Adaptation for a Sustainable Africa, Kenya

Keywords: *Agroecology, Women, Policy, Food Security, SDG 2, 10 & 13*

1. Summary

Millions of women in Kenya suffer from food insecurity, which is worsened with the unpredictable rainfall patterns and unsustainable farming practices that use expensive farm inputs such as seed, fertilizer and pesticides and disrupt local biodiversity and ecosystems. A radical shift in farming system that draws from indigenous and cultural knowledge is therefore needed that can increase food production substantially and sustainably in the reality of the changing climate and declining natural resources.

2. Relevance

Agroecology is one of the most promising holistic approach amongst smallholder women farmers that can contribute to achieving sustainable development goals 2, 10 and 13. This stems from the nature and principles of agroecology which ensures healthy soil and plant nutrient flows are enhanced through recycling, losses of farm resources are minimized and diversity of crop, livestock and trees are maintained to minimize the risks of harvest failure in case of the events such as climate related shocks and/or outbreak of crop pests and diseases.

3. Aims & Objective

The aim of this study is to explore the policy potential of agroecology to meet the needs of women farmers in Kenya. Objective is to assess which agriculture and climate change related policies and strategies can be mobilized to support women-led agroecology practices in Kenya.

4. Methods

Study questions were; how agroecology is practiced amongst women in Kenya and what policies (current or future) can support women's shift to practicing agroecology? The study used qualitative research methods, that is, literature review of policy documents, 62 semi-structured interviews and six focus group discussions (FGD).

5. Results

Despite the lack of an agroecology policy, there exist climate smart agriculture policy that can be utilized to scale up agroecology amongst women, and thus contribute to improvements of their livelihoods, reduce, gender, social and economic inequalities, ensure sustainable food production systems and contribute towards achieving SDG 2, 10 and 13. Agroforestry, crop rotation, soil and water conservation are a few of the agroecological practices practiced by women. However, women farmers are not ready to embrace agroecology practices because it is labour and resource intensive. The constraints can be addressed by providing subsidies and incentives to encourage Women to adopt agroecology practices.

6. Conclusion

Women in Kenya are aware of and practicing of agroecology for food security and building resilience to climate change impacts. These practices have the potential to reinforce synergies amongst the objectives of food security, poverty reduction, adaptation and resilience building. Therefore, it is important for the government to either develop a gender responsive agroecology policy or mainstreaming agroecology within existing policies and/or strategies such as climate smart agriculture policy.

7. Contact Details: Mary Nyasimi, mnyasimi@iccasa-africa.org and mnyasimi@gmail.com

Influence of Access and Ownership of Livelihood Assets on Household Food Security Status in Nigeria.

Ogunnaike Maria Gbemisola

Department of Agricultural Economics and Farm Management, Federal University of Agriculture, Abeokuta, P.M.B. 2240, Abeokuta, Ogun State, Nigeria.

Keywords: *Farming household, food security, livelihood assets, Nigeria*

1. Summary

The study concluded that access to and ownership of different productive livelihood assets can boost household food security status in Nigeria which will help to achieve the sustainable development goals (SDGs) to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture (goal 2).

2. Relevance

Food security exists at the household levels when all people in the household, always, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs for a healthy and active life. This is necessary as part of efforts to achieve the SDGs.

3. Aims & Objectives

This study examined the influence of access and ownership of livelihood assets on household food security in Nigeria. Primary data were collected with the aid of a structured questionnaire using multistage sampling technique from 1,925 cereal farming households across six agro-ecological zones in Nigeria. Data were collected on socioeconomic characteristics, ownership of livelihood assets and food security survey module.

4. Methods

Food Security Status (FSS) was assessed using Household Food Security Survey Modules (HFSSM). The data were further analyzed using frequency counts, percentages, mean and Ordered Probit model of household food security.

5. Results

Livelihood access and ownership results shows that for human asset (the average years spent on formal education was 8 years while 60% of the sampled household had access to extension services); majority (86%) of the sampled household owned a land (natural asset), 99% belong to a social group with an average loan of ₦ 84,879.22 (financial asset); also, 96% uses family labour, 66% hired labour and 81% had access to farm machinery (physical asset). HFSSM result shows that 39.4% of the respondents had low FSS while the remaining 31.7% and 28.9% had marginal and high FSS respectively. Ordered probit result reveals that increase in age ($p < 0.01$) by one year reduces the chances of household becoming marginally food secure. Belonging to a female headed household ($p < 0.10$), social group membership ($p < 0.05$), increase in income ($p < 0.10$) and amount of money borrowed ($p < 0.05$) increase the tendency of becoming marginally and highly food secure. Increase in farm size ($p < 0.10$) by one hectare increases the chances of becoming high food secure.

6. Conclusions

This study recommends adequate access to and use of livelihood assets such as land and credit or loan as well as being a member of a group are important in improving the food security status of farming households in Nigeria.

7. Contact details: Ogunnaike Maria Gbemisola, oluwagbemisolami@gmail.com

Sex-specific dietary responses in diet-induced obesity in C57BL/6 mice

Sung-Eun Kim¹, Sukjoon Yoon², and Mi-Kyung Sung¹

¹ Department of Food and Nutrition, Sookmyung Women's University, Seoul 04310, Republic of Korea

² Division of Biological Sciences, Sookmyung Women's University, Seoul 04310, Republic of Korea

Keywords: obesity, sex, high-fat diet, high-fructose diet, microarray

1. Summary

Sex-related biological factors and gender-specific dietary choices may explain differences in the incidence of obesity between males and females. In the present study, our data indicates that genome-wide gene expression profiles in adipose tissue of obese mice differ by sex and diet.

2. Relevance

Obesity is known to increase the risk of non-communicable diseases such as cardiovascular disease, diabetes, stroke, and several cancers. Global statistics indicated that women are more likely to be obese than men, while sex and gender differences have been largely ignored in scientific reports which have caused serious biases in research conclusions.

3. Aims & Objectives

We investigated differential gene expression patterns of adipose tissue both in male and female mice fed high-fructose and high-fat diets in order to explain mechanisms associated with sex differences in obesity.

4. Methods

Eight-week-old male and female C57BL/6 mice were assigned to receive either a high-fructose (70% carbohydrate energy), high-fat (60% fat energy), or control (10% fat energy) diet for 16 weeks (n=8 per group). After total RNA isolation from tissue samples, purified biotinylated cRNA for each sample was hybridized onto the SurePrint G3 Mouse Gene Expression 8x60K v2 (Agilent, Inc., Santa Clara, CA). Functional enrichment analysis was performed using GSEA tools and DAVID online tools.

5. Results

The rate of increase in body weight was significantly higher in male than that of female in the control diet group, while it did not differ by sex in mice fed a high-fructose or high-fat diet. The high-fat diet group showed the greater rate of increase in body weight compared to the high-fructose diet group (male, 186.8 ± 2.0 vs. 127.2 ± 1.7 ; female, 182.9 ± 5.8 vs. 120.9 ± 3.4). Tissue microarray analysis showed that the number of differentially expressed genes in the high-fructose diet group was 155 and 69 in male and female, respectively. In the high-fat diet group, 250 genes associated with adaptive immune response and cell migration were differentially expressed in male, whereas 206 genes involved in cell adhesion and acyl-CoA metabolic process were regulated in female. Twenty-nine genes related with immune system process and response to stimulus were affected both in male and female by a high-fat diet. We identified three genes from adipose tissue which may be responsible for female-specific responses to high-fat and high-fructose diets. Currently, further analysis for gene function is underway.

6. Conclusions

Our data shows that responses to specific diets are different by sex, suggesting that sex- and gender-based strategies for the prevention and treatment of obesity need to be established (SDG3: Good health and well-being).

7. Contact details: Sung-Eun Kim, sekim@sookmyung.ac.kr; Sukjoon Yoon, yoonsj@sookmyung.ac.kr; Mi-Kyung Sung, mksung@sookmyung.ac.kr

The effects of energy intake self-monitoring using a mobile application on anthropometric and metabolite profile changes: a randomized trial

Taiyue Jin ^{a,1}, Gyumin Kang ^{b,1}, Sihan Song ^a, Heejin Lee ^a, Yang Chen ^a, Mal-Soon Shin ^c, Sung-Eun Kim ^d, Youngja H. Park ^{b,*} and Jung Eun Lee ^{a,e,*}

^a Department of Food and Nutrition, College of Human Ecology, Seoul National University, Seoul, Republic of Korea;

^b College of Pharmacy, Korea University, Sejong, Republic of Korea; ^c School of Global Sport Studies, Korea University, Sejong, Republic of Korea; ^d Department of Food and Nutrition, Sookmyung Women's University, Seoul, Republic of Korea;

^e The Research Institute of Human Ecology, Seoul National University, Seoul, Republic of Korea

Keywords: Obesity, Mobile health (mHealth), Mobile application, Metabolomics, Randomized trial

1. Summary

Obesity prevention is a key issue for good health and well-being. Mobile health (mHealth) is a useful tool for obesity management but the weight loss effect of mHealth may differ by gender.

2. Relevance

Gender may be an important modifying factor for anthropometric and metabolite profile changes.

3. Aims & Objectives:

This study aimed to identify anthropometric and metabolite profiles in response to energy intake self-monitoring in the application group (App group) compared to the paper-based diary group (Paper group) and to examine whether changes varied by gender.

4. Methods

A two-arm randomized parallel trial was conducted among 57 participants (30 men and 27 women) aged 18-37 years. Participants with a body mass index (BMI) >25.0 kg/m² were randomly assigned into either the App group (n=30; 16 men and 14 women) or the Paper group (n=27; 14 men and 13 women). Participants were instructed to record their foods and supplements using the “Noom Coach” application or a paper-based diary and advised to reduce by 500 kcal/day from the estimated energy requirements (EER) during the 12-week intervention period. Relative changes in anthropometric and clinical parameters from pre- to post-intervention were compared between the two groups in men and women. Untargeted metabolomics was applied to discriminate between the pre- and post-intervention metabolite profiles according to the intervention groups.

5. Results

Out of the 57 participants, 54 (94.7%) completed the trial. The frequency of recording was significantly higher in the App group than the Paper group (p -value = 0.001). Change in body weight was not significantly different between the two groups among either men or women. However, we observed increases in body fat mass and LDL-cholesterol levels in the App group and decreases in these measures in the Paper group (p -value: 0.03 and 0.02, respectively). Although these differences were mainly derived by men, there were no differences in changes in body fat mass or LDL-cholesterol levels between the two groups when separating men and women. A significant difference in change in triglyceride level was observed between the two groups among women (p -value = 0.03). Triglyceride level increased in the App group but decreased in the Paper group among women. Acetylcholine decreased to a greater extent from pre- to post-intervention in the App group than the Paper group (p -value = 0.05). In addition, 1-acyl-sn-glycerol-3-phosphocholine and alpha-linolenic acid levels significantly increased in the App group, whereas methylglyoxal, (S)-malate and phosphatidylcholine levels significantly decreased in the Paper group. When we separated men and women, metabolite profiles at pre- and post-intervention showed different patterns, but changes in metabolite intensity were not significant between men and women.

6. Conclusions

We found slight increases in body fat mass and LDL-cholesterol levels in the App group among men. Our study observed that triglyceride level increased from pre- to post-intervention in the App group but decreased in the Paper group among women, showing a significant difference between the two groups. Metabolite clusters at pre- and post-intervention differed by gender. However, differences in changes in metabolite intensity were not statistically significant between men and women.

7. Contact details: *Correspondence: Jung Eun Lee, jungelee@snu.ac.kr; Youngja H. Park, yjhwang@korea.ac.kr;

¹These authors have contributed equally to this study.

Incorporating gender differences into quantifying a food frequency questionnaire to examine the association of total energy intake and mortality

Minji Kang^{1,2}, Song-Yi Park², Carol J. Boushey², Lynne R. Wilkens², Loïc Le Marchand², Jean Hankin², Hee-Young Paik^{1,3}

¹ Center for Gendered Innovations in Science and Technology Researches (GISTeR), Korea Federation of Women's Science & Technology Associations, Seoul, Republic of Korea; ² Cancer Epidemiology Program, University of Hawaii Cancer Center, Honolulu, Hawaii, USA; ³ Department of Food and Nutrition, College of Human Ecology, Seoul National University, Seoul, Republic of Korea

Keywords: *portion size, food frequency questionnaire, total energy intake, mortality, health*

1. Summary

Diet-related chronic diseases, including cancers and cardiovascular diseases, have become major threats to health and well-being of world populations (Goal 3 of UNSDGs). Incorporating gender differences in dietary assessment for diet-disease studies may improve understanding of diet-health relationships by gender and lead to strategies for improved health of men and women worldwide.

2. Relevance

Energy intake is critical to good health in later life because it is related to chronic diseases and mortality. Accounting for gender differences in food portions of a food frequency questionnaire (FFQ) improved accuracy of energy intake measurement. However, it is not known whether incorporating gender differences into FFQ quantification affects the associations between energy intake and mortality.

3. Aims & Objectives

This study aims to evaluate whether incorporating gender differences in portion sizes into quantifying a FFQ influences the association of total energy intake with all-cause and cause-specific mortality in men and women.

4. Methods

The analysis included 156,434 participants (70,142 men and 86,292 women) in the Multiethnic Cohort Study, aged 45–75 years at baseline. A total of 49,728 deaths were identified during an average follow-up of 18.1 years. Total energy intake and percentage energy from macronutrients were calculated using the original portion sizes (PS) and gender-specific (GS)-PS and were divided into quintiles for men and women. The associations of total energy intake and percentage energy from macronutrients with all-cause, CVD, and cancer mortality were examined using Cox regression with adjustment for potential confounders.

5. Results

Mean $\pm$ SD daily total energy intake using original-PS was 2449 ± 1135 kcal for men and 1979 ± 962 kcal for women; using GS-PS was 1996 ± 884 kcal for men and 1595 ± 730 kcal for women. For men, the HRs (95% CIs) for all-cause, CVD, and cancer comparing the highest to the lowest quintile of total energy intake were 1.05 (1.00–1.10), 1.07 (0.99–1.16), 1.03 (0.95–1.13) using original-PS and 1.07 (1.02–1.12), 1.11 (1.03–1.20), 1.02 (0.94–1.12) using GS-PS, respectively. For women, the corresponding HRs were 1.03 (0.98–1.09), 0.99 (0.91–1.08), 1.10 (1.00–1.21) using original-PS and 1.06 (1.01–1.12), 1.02 (0.94–1.12), 1.07 (0.97–1.18) using GS-PS. Both versions of percentage energy from total fat were associated with an increased risk of all-cause, CVD, and cancer mortality; on the other hand, both versions of percentage energy from carbohydrate showed inverse associations with all-cause, CVD, and cancer mortality in both men and women.

6. Conclusions

When using original-PS and GS-PS, the estimated total energy intake differed, resulting in marginal differences in the associations of total energy intake with all-cause, CVD, and cancer mortality. More analyses are needed to identify strategies suitable to improve health by gender.

7. Contact details: Hee-Young Paik, hypaik@snu.ac.kr

Innovative reduction of postharvest losses of camel milk using magnetic refrigeration technology for improved household food security among pastoral communities of Kenya

Winfred Mueni Mulwa

Department of Physics, Egerton University, P.O Box 536- 20115 Egerton - KENYA

Keywords: *Gender gaps, global warming, Magnetic refrigeration, Food production, Food security.*

1. Summary

Improving energy efficiency, mitigating the emission of greenhouse gas, reducing the ozone layer depletion and global warming is the target of developing countries today. Gender equality (Goal 5) in agriculture and climate smart agricultural practices is still a challenge. We need to contribute to income generation (Goal 3), reduced poverty (Goal 2) and public health risks (Goal 3), improved food security (Goal 2) and livelihoods of pastoral communities in north eastern (NE) part of Kenya (Goal 17).

2. Relevance

Food security is a challenge to women in arid areas like NE part of Kenya. As a woman, I have come up with a research proposal to help these women in improving their food security. I have come up with a technology, magnetic refrigeration. Magnetic refrigeration has a higher cooling efficiency, low energy consumption, more compact and environmentally friendly when compared with vapor-compression refrigeration.

3. Aims & Objectives

- To contribute to income generation, reduced poverty and public health risks, improved nutrition security and livelihoods of pastoral communities in NE Kenya.
- Corroborate the existing technologies, innovations and management practices (TIMPS) and identifying stakeholders in camel milk value chain.
- Validation and promotion of developed TIMPS of camel milk safety and quality.
- Sensitize and engage stakeholders in standard food safety and quality procedures along the camel milk value chain.

4. Methods

Being a Physicist, I intend to incorporate other women from agriculture and food science. We will provide scientific knowledge regarding agriculture and food systems. We will include computational physics in collection of data. We will visit at least 100 families in NE Kenya.

5. Results

We will come up with a magnetic refrigerator and women will have knowledge on food production and safety achieving zero hunger in NE Kenya. At least 100 families will use magnetic refrigerators effectively.

6. Conclusions

This project addresses the Strategic Development Goals of the United Nations (SDG-UN). That is, **Goal 2:** Zero hunger: Camel milk provides a source of protein for pastoralist families. Camel milk brings income to actors all along the value chain. **Goal 3:** Good health and well being: Reduction of hazards in milk, hence better income. **Goal 5:** Reduced inequality because majority of actors in the camel milk value chain are women. **Goal 17:** Knowledge mobilization will be done through partnerships like the women dairy cooperative found in NE Kenya.

7. Contact details: Winfred Mueni Mulwa, mulwawinfred@gmail.com

Genders and mental health problems in adolescence

Jeong Yee¹, Jung-Rok Lee², Sangbeom Jun^{3,4}, Heisook Lee⁵, Youjin Lee³, Yeon Yu⁵, and Hye Sun Gwak¹

¹College of Pharmacy and Graduate School of Pharmaceutical Sciences, Ewha Womans University, Seoul, Korea;

²Division of Mechanical and Biomedical Engineering, College of Engineering, Ewha Womans University, Seoul, Korea;

³Department of Electronic and Electrical Engineering, College of Engineering, Ewha Womans University, Seoul, Korea;

⁴Department of Brain & Cognitive Science, College of Scranton, Ewha Womans University, Seoul, Korea;

⁵Center for Gendered Innovation in Science and Technology Research, Seoul, Korea.

Keywords: *gender, mental health problems, smartphone addiction, anxiety, aggression, adolescence*

1. Summary

Mental health problems are one of the challenging issues among adolescents. Gender was linked to mental health problems such as smartphone addiction, anxiety and aggression (SDG: 3).

2. Relevance

Adolescence is a critical developmental period in which physical, social, and emotional changes can build up negative self-perceptions. Also, it is a time when several mental health problems increase, and the gender differences in these problems have been reported.

3. Aims & Objectives

The purpose of this study was to examine the relationship between gender and mental health problems in adolescents.

4. Methods

A quantitative, large scale cross-sectional study was conducted in Korea. The survey questionnaire included the scales for assessing smartphone addiction (Korean Smartphone Addiction Proneness Scale; K-SAPS), anxiety (Revised Children's Manifest Anxiety Scale; RCMAS) and aggressive behavior (The Aggression Questionnaire; AQ) in adolescents.

5. Results

The analyses were performed in 1796 adolescents, including 820 boys and 976 girls. The 15.1% of boys and 23.9% of girls were at risk of smartphone addiction ($p < 0.001$), and the 5.3% of boys and 11.7% of girls were classified as the anxiety group ($p < 0.001$). Inversely, the boys had higher aggression scores than the girls did (62.0 ± 16.0 vs 60.0 ± 16.2 , $p < 0.001$).

6. Conclusions

This study demonstrated that the girls had higher risk of smartphone addiction and anxiety than the boys did, whereas the boys showed higher aggression was associated with total aggression scores than the girls did.

7. Contact details: Jeong Yee, jjjhello1@naver.com

Gender differentials in intra-household decision making: case of small-scale rice farmers in Ekiti State, Southwest, Nigeria

Adekemi Obisesan & Olalekan Akinola

Department of Agricultural and Resource Economics
Federal University of Technology, Akure, Ondo State, Nigeria

Corresponding author's e-mail: kemi_triumph@yahoo.com/ aaobisesan@futa.edu.ng
ORCID ID: 0000-000301433-0118

Abstract

The study focuses on gender differentials in intra-household decision making and the determinants of women's decision making power among rice farmers in Ekiti State, Southwest Nigeria. The study employs a questionnaire interview in the collection of primary data. The data were collected between July and September, 2019 cropping season. The questionnaire contained socio-economic/demographic information and decision making on rice farming within the household. Empirical results reveal that female farmers are disadvantaged in access to economic resources. There is statistically significant difference in decision making in that male farmers solely make most decisions on rice production and revenue while the female farmers tend to have more control on marketing of produce. Age of the farmer, non-farm activity participation, land ownership and access to credit significantly increase female farmers' decision making power. The results suggest that market intervention will enhance women participation in decision making. Access to economic resources especially credit facilities, land and information were the major constraints female farmers face in developing their capabilities as farmers. There is need to close gender gap in decision making in order to engender the creation of a conducive economic environment in the Nigerian rice sector.

Keywords: *Gender, decision, intra-households, farming, Southwest Nigeria.*

New Bali under Sea Level Rise: Projected Inundated Areas and Adaptation Strategies for Tourism Industry in Seribu Islands, Indonesia

Intan S. Nurhati¹, Gusti A.K. Surtiari², Karlina Triana¹, Intan A.P. Putri² and Sari Seftiani²

¹ Research Center for Oceanography, Indonesian Institute of Sciences (LIPI), Indonesia. ² Research Center for Population, Indonesian Institute of Sciences (LIPI), Indonesia.

Keywords: *Sea level rise, tourism, economic valuation, ecosystem-based adaptation, Indonesia*

1. Summary

Our sea-level rise (SLR) adaptation strategies for the tourism industry in the Seribu Islands recommend ecosystem-based adaptation strategy using mangrove ecosystems combined with hard protection, building regulations in risk-prone areas and government aids.

2. Relevance

Seribu Islands, located off the coast from the capital city of Jakarta, has been chosen as one of the ten national priority tourist destinations often referred to as the ‘new Bali’ in Indonesia. While improved waste management is within the integrated tourism master plan, the assessment of climate change impacts such as SLR lacks.

3. Aims & Objectives

We formulate adaptation strategies for the coastal tourism sector against SLR in Seribu Islands using a multidisciplinary approach involving projected island inundation, economic valuation and risk perception.

4. Methods

We used satellite-based altimetry data to estimate SLR trends in recent decades. The Digital Elevation Model combined with the SLR projections of the Intergovernmental Panel of Climate Change served to estimate inundated areas. These projections were used to calculate the potential economic loss to the tourism industry using the benefits transfer method. We conducted a community survey to understand current risk perception as inputs for formulating effective adaptation strategies against SLR in the Seribu Islands.

5. Results

Sea level in the Indonesian maritime region has risen by about 0.11 m between 1992-2020. Under future SLR scenarios of 0.43-0.84 m by 2100 (IPCC RCP2.6 and RCP8.5), economic losses from submerged tourism infrastructures alone range between US\$ 104.9 million to 188.6 million. Topographic conditions of the Seribu Islands result in varying percentages of inundated areas under SLR. For instance, under a 1 m SLR, Pari Island experience will only have less than 6% of its area underwater, while Tengah Island will have a 90% inundated area. Current risk perception shows 68.1% of respondents projecting the likelihood of coastal inundation, 60% for partial island submergence and 52.1% for full submergence within the next 20 years. The majority (87%) of residents plan to continue working in the tourism industry, while those who do not alarm the degrading coral reef environments and increase pollution are threats to ecotourism besides extreme weather and the pandemic. Mangroves play an important role in SLR adaptation strategies in the Seribu Islands, with 38.9% recommending an ecosystem-based adaptation strategy and 40.4% recommending a hybrid of mangrove and hard protection. These strategies should be complemented by building regulation in risk areas and government aids in disaster events.

6. Conclusions

The sustainability of marine-based tourism in the Seribu Islands relies on maintaining healthy marine ecosystems and adapting to the changing environments. We recommend the role of ecosystem-based strategy using mangroves combined with hard protection, building regulations in risk-prone areas and government aids for SLR adaptation strategies in the Seribu Islands. The work is tangent to SDG 13 to take urgent action to combat climate change and its impacts.

7. Contact details: Intan S. Nurhati, intan.suci.nurhati@lipi.go.id

Resilience and Build Back Strategies for the Coastal Tourism Industry from the COVID-19 Pandemic in Seribu Islands, Indonesia

Gusti A.K. Surtiari¹, Intan S. Nurhati², Sari Seftiani¹, Intan A.P. Putri¹, and Karlina Triana²

¹ Research Center for Population, Indonesian Institute of Science (LIPI), Indonesia. ² Research Center for Oceanography, Indonesian Institute of Sciences (LIPI), Indonesia.

Keywords: COVID-19, tourism, resilience, build back, Indonesia

1. Summary

We assessed how the tourism industry in Seribu Islands, Indonesia, responds to the pandemic and sea-level rise as global crises of differing times of emergence. Our community survey identified that strengthened coastal ecosystem services such as mangroves from private and public funds could be adopted to dampen the economic downturn's impacts in the short-term while strengthening resilience against climate change in the long-term.

2. Relevance

The pandemic disrupts the tourism industry worldwide. The UNWTO recently revised a projected tourism growth of 2-4% to a dip of 20-30% in 2020. In Indonesia, Seribu Islands off the coast from the capital Jakarta have been chosen as one of the ten national priority tourist destinations often referred to as the 'new Bali.' The tourism industry in the small islands is prone to pollution, extreme weather, sea-level rise, and now the pandemic.

3. Aims and Objectives

We investigate the socio-economic impacts of the pandemic to the tourism industry in the Seribu Islands and gain insights into how the community responds to the prolonged pandemic.

4. Methods

We surveyed 94 respondents on 28 May - 23 June using non-probability sampling through an online survey of google form distributed through local networks.

5. Result

Presently, 66% of residents in the Seribu Islands rely on tourism, while the pandemic suddenly appeared with no end in sight. As much as 88% of respondents reported reduced incomes since the collapse of the tourism sector peaked in March 2020. About 51.1% of the respondents have no income during the pandemic, in which most of them have no backup financial plans. Respondents with incomes between IDR 6-10 million (Indonesian Rupiah or USD 420-700, which are above the minimum wage of USD 300) decreased from 16.0% to 5.3%. Limited alternative jobs (31.3%) and termination of contracts (6.0%) drove these changes, with only 16.9% stated finding new jobs. During the pandemic, the local government provided food stamps to island residents to cope with the sudden socioeconomic changes. We identify an opportunity to opt for eco-strategies to build resilience during the pandemic while benefiting the adaptation towards a slow onset change, namely sea-level rise. Local programs such as mangrove planting and developing infrastructures funded via private and public funds could boost employment during the pandemic.

6. Conclusion

The pandemic and sea-level rise are global crises of different emergence; however, they have a similarity in which early actions mitigate losses. Our findings show the value of ecological rebuilding in the period of economic downturn to sustain their livelihood in the short-term and build-back of marine ecosystems. This research is relevant to SDG 13 on climate change.

7. Contact details: Gusti A.K. Surtiari, gust004@lipi.go.id

Resolving gender inequality in access to disaster risk information

Siwon Song¹, Yong-Sang Choi¹, Hye-Sil Kim¹, Heisook Lee², Yoon-Kyoung Lee¹, and Changmo Sung³

¹Center for Climate/Environment Change Prediction Research, Ewha Womans University, South Korea,

²Center for Gendered Innovation in Science and Technology Research, South Korea,

³Graduate School of Energy Environment Policy & Technology, Korea University, South Korea

Keywords: *climate change, gender inequality, pre-disaster management, geostationary satellite, Southeast Asia and Pacific Islands*

1. Summary

In order to achieve sustainable development of the Earth under climate change (SDG13), we aim to address gender inequality (SDG5) in access to disaster risk information by connecting geostationary satellites and mobile devices (SDG9, SDG11).

2. Relevance

Since the burden of family care and livelihood is generally weighted on women in developing countries, the opportunity to adapt to climate change is not the same for men and women. In order to effectively respond to climate change and reduce its impact, gender-balanced opportunities for learning and engaging in climate change are needed. This should create a system of dissemination of disaster risk information that can be easily used/developed/equipped by everyone, especially women.

3. Aims & Objectives

As a way to reduce the vulnerability of women in developing countries in Southeast Asia, we aim to examine the effectiveness of the system for delivering disaster risk information using geostationary satellites and mobile devices.

4. Methods

GEO-KOMPSAT-2A (GK2A), Korea's second geostationary satellite launched in 2018, provides data for predicting thunderstorm events. This information is used as disaster risk data for Southeast Asia and Pacific Island regions. Using the mobile app's push alerts, this satellite information is quickly distributed to residents, and other disaster information not detected by the satellite is collected and distributed through mobile app reporting.

5. Results

Thunderstorm prediction of our disaster risk information system in Thailand showed the Probability of Detection (POD) = 73%. This pre-disaster management system supported by GK2A showed a fairly good probability of detection of thunderstorm events, while it was difficult to predict the conditionally unstable atmospheric motion in the tropics with only numerical models. Since this disaster information is delivered quickly and shared transparently to mobile app users, regardless of gender, we look forward to reducing the damage from the climate change caused by gender inequality.

6. Conclusions

The pre-disaster management through providing enough information before the disaster happens is more effective than the post-disaster management to reduce the damage done by climate change (SDG13). Once this system settles down in developing countries (SDG9), it will be a sustainable solution (SDG11) to curb the damage done by climate change while helping escape the vicious circle of the vulnerabilities women face (SDG5) when said climate change strikes. Moreover, if this system would work together on an open platform in "Meteorological/Disaster Prevention Agency" in many countries, the effect will be maximized.

7. Contact details: Yong-Sang Choi, ysc@ewha.ac.kr

Unlocking the Swab: Characterizing Amphibian Skin Fungi

Jennie Wuest¹, Steve Kutos¹, Elle M. Barnes¹, J.D. Lewis¹

¹ Fordham University, USA

Keywords: wildlife disease, biodiversity loss, ecosystem health, amphibians, pathogenic fungi

1. Summary

Amphibians are important because of the role they play in the food web as well as in nutrient cycling--especially in urban ecosystems. However, they are being threatened by the rapid spread of a deadly wildlife disease caused by the fungus *Batrachochytrium dendrobatidis* (*Bd*). This research project addresses SDG 15, protecting life on land, as well as SDG 13, combating the impacts of climate change, as the ultimate goal of the project is to combat the spread of a wildlife disease whose effects are exacerbated in areas of anthropogenic land-use change.

2. Relevance

Many amphibian species are currently at risk of extinction due to anthropogenic land-use change and the spread of the fungal wildlife disease *Bd*. Given the role that amphibians play in urban ecosystems, uncovering factors driving amphibian decline is critical to local ecosystem health.

3. Aims & Objectives

Many studies have shown that certain cutaneous bacteria provide a natural resistance against *Bd*, as a result of competitive interactions. However, we know little of the fungal diversity (beyond *Bd*) that exists on their skin and how those fungi interact with the disease and other cutaneous microbes. To fill this gap, we explored the culturable fungal diversity and function of the skin microbiome of the eastern redback salamander (*Plethodon cinereus*) at various sites in the New York City area. We hypothesized that salamanders in the New York area would have a species-rich fungal microbiome that varies in composition by location.

4. Methods

Individuals were swabbed and plated on two different types of media, PDA and MMN, which are common fungal media that provide different nutrients to maximize culture diversity. Following morphological isolation of the fungal cultures, we performed DNA extraction followed by PCR to amplify the full ITS region. Once we confirmed the success of the PCRs through gel electrophoresis, we submitted 28 of the samples for Sanger sequencing. Sequencing results were run through the NCBI BLAST database to find matching sequences of over 97%.

5. Results

Our results suggest a diverse fungal community present on the skin microbiome of *P. cinereus*. From 28 individuals, we isolated over 100 morphologically-distinct strains. Twenty-eight of these distinct strains were selected for genomic identification and resulted in 25 OTUs, mainly in the divisions Ascomycota and Mucoromycota. The number of distinct OTUs we identified reveal a culturable species-rich fungal microbiome, the composition of which varied by location.

6. Conclusions

The diversity revealed in our results also suggests the potential for certain strains of these skin-associated fungi present to be inhibitory or facilitatory to *Bd* growth. In the next stage of this project, we will perform challenge assays with these cultures and *Bd* in order to determine inhibitory potential and to assess if fungi play a critical and often overlooked role in the microbial defense of amphibians to *Bd*. This research has important ecological implications as *Bd* is a large threat to global amphibian populations, and any additional discoveries regarding fungi in the amphibian microbiome could be of use in combating the spread of wildlife disease.

7. Contact details: Jennie Wuest, jwuest1@fordham.edu

References:

- Scheele, Ben C., et al. 2019. Amphibian fungal panzootic causes catastrophe and ongoing loss of biodiversity. *Science*.
Barnes et al. 2020. Predicting microbiome function across space is confounded by strain-level differences and functional redundancy across taxa. *Frontiers in Microbiology* 11:101.
Kearns, PJ, et al. 2017. Fight Fungi with Fungi: Antifungal Properties of the Amphibian Mycobiome. *Frontiers in Microbiology* 10.

Gender Focus at climate action. Youth for Climate Argentina experience

Maria Elina Estébanez¹ Roque Pedace² Magdalena Pedace³ María Mercedes Pombo⁴

¹ Universidad de Buenos Aires /Centro REDES-CONICET Argentina. ²Universidad de Buenos Aires/CANLA Argentina. ³ Jóvenes por el Clima Argentina; ⁴ Jóvenes por el Clima Argentina.

Keywords: *gender - climate action- youth*

1. Summary

Jóvenes por el Clima Argentina (Youth for Climate Argentina- JOCA) is a social movement on climate action. We present the JOCA case as an SDGs growing initiative at the country and part of the climate youth movement that expanded in the last years at a global scale. In Argentina, JOCA shares the youth climate action arena with other environmentalist groups (linked with NGOs, political parties, and territorial-based organizations). It has had intense links with the local scientific community and participated in various instances of political dialogues and incidence. One particular note is the early inclusion of the concept of intersectionality at its institutional narratives, in order to bring together the protection of the planet and the construction of resilience from climate change action with the gender approach and socio-economic and cultural inequalities. This feature is clearly relevant for more effective and sustainable social interventions.

2. Relevance

The inclusion of gender focus on environmental action is an outgoing feature of the new youth climate movements. But even so, the way in which this convergence is expressed and its results, may vary according to cultural, political and economic contexts, in the different countries and regions where they occur. A better understanding of the kind of actions in high social inequality contexts, can help strengthen the innovative citizen initiatives that aim to influence gender agendas.

3. Aims & Objectives

To introduce and contextualize an experience of a climate youth movement in a peripheral country, identifying the historical and institutional process of creation of JOCA, its outcomes, and the concepts, scientific approaches and political ideas that found its ideological frame of action. Particularly, to describe gender approach and climate action links related to JOCA movement.

4. Methods

This case is worked from a double perspective: first, a descriptive retrospective approach based on a one-case study (as a part of an ongoing social investigation about science, citizen movements and public interest problems). Second, a participatory approach with the addition of JOCA members as a part of the process of co-construction of the analysis.

5. Results

The recent experience of JOCA shows the results of a multiple actor interaction. Dialogues, meetings, workshops and other activities joined climate scientist, feminist activists, young people and politicians. In this way it is observed a strong process of cultural appropriation of expert knowledge, analytical categories and gender agendas in the organization's action. Through the lens of intersectionality, JOCA have got to bring together social, environmental and gender equity objectives.

6. Conclusions

The case illustrates a particular type of youth citizen experience located in a peripheral country that promotes fair solutions around climate crisis, by enhancing equal opportunities and rights beyond the sociocultural impositions associated with gender.

7. Contact details: Maria Elina Estebanez, marilina@ricyt.org; Magdalena Pedace Magdalena.pedace@gmail.com

“Greening” of the Sophomore Organic Chemistry Laboratory Curriculum

Cecilia H. Marzabadi, David Laviska, Nada Khan, Wyatt Murphy, Setrak Tanielyan and Robert Augustine

Department of Chemistry & Biochemistry, Seton Hall University, U.S.A.

Keywords: *green, organic chemistry, society, interest, inclusivity*

1. Summary

We have implemented a green(er) laboratory curriculum in our sophomore organic chemistry class of ~ 300 students. The new curriculum uses less-toxic, greener reagents and solvents, and has resulted in fewer safety concerns, less chemical waste, and greater student engagement. Survey responses indicated that students felt they had acquired more knowledge about green chemistry and the seventeen United Nation Sustainable Development Goals by the end of the semester.

2. Relevance

The study of green(er) organic chemistry in the laboratory provides students with a broader context for concepts presented in the lecture setting. We are utilizing a social-justice framework and employing a problem-solving approach to engage students. By being inclusive and far-reaching, our newly restructured experimental sequence addresses many of the goals delineated by the UNSDGs.

3. Aims & Objectives

The main goal of our curricular redesign and its implementation was to assess the impact of a green chemistry focus on undergraduate organic chemistry students' interest and participation in the laboratory course and more broadly, in organic chemistry in general. By providing a societal context for the study of chemistry, we hypothesized that students would become more interested in the topics covered, work on improving their problem solving skills, and begin to make connections between course concepts and the environment and concepts like stewardship and sustainability.

4. Methods

Organic chemistry laboratory experiments were modified to reflect the twelve principles of green chemistry. Prior to broad implementation, a small cohort of undergraduate students piloted the experiments to optimize procedures and outcomes. The new, greener curriculum was rolled out in the summer of 2019 with a single laboratory section, and then in full scale during the following academic year (2019-2020) with a group of ~300 diverse students. All groups of students were surveyed about their interest in and knowledge about green chemistry at the end of each semester.

5. Results

Student responses indicated an increase in both interest in and knowledge about the principles of green chemistry. Some students indicated an interest in exploring additional studies and/or research in green(er) organic chemistry.

6. Conclusions

A green(er) organic chemistry laboratory experience was successfully launched. As measured through course evaluations, students became more interested in the topic and its application to the world around them. Their studies made them more aware of using reagents and solvents that are less toxic and more environmentally friendly. They were trained in an area of active growth in the chemical industry. Through a contextual focus on subjects of broad social relevance, preliminary evaluations show greater engagement by students from underrepresented groups such as women and students of color.

7. Contact details: Professor Cecilia Marzabadi, cecilia.marzabadi@shu.edu

Gender and Work from Home During COVID19 Survey: Preliminary Results

Frize M¹, Bezak E², Lhotska L³, Marcu L^{2,4}, Barabino G⁵, Ibrahim F⁶, Lim S⁷, Kaldoudi E⁸, Marques da Silva AM⁹, Stoeva M¹⁰, Tan P¹¹, and Tsapaki V¹²

¹Dept of Systems and Computer Engineering, Carleton University, Ottawa, ON, Canada K1S 5B6

²Cancer Research Institute, University of South Australia, Adelaide SA 5001, Australia

³Faculty of Biomedical Engineering, Czech Technical University in Prague, Prague 6, Czech Republic

⁴Faculty of Science, University of Oradea, 1 Universitatii str, 410087 Oradea, Romania

⁵Grove School of Engineering, The City College of New York, New York, NY, USA

⁶Department of Biomedical Engineering and Centre for Innovation in Medical Engineering, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur, Malaysia

⁷School of Chemical and Biomedical Engineering, Nanyang Technological University, Singapore

⁸School of Medicine, Democritus University of Thrace, Alexandroupoli, Greece

⁹School of Technology instead of Faculty of Physics, Pontificia Universidade Católica do Rio Grande, Porto Alegre, Brazil

¹⁰Department of Diagnostic Imaging, Medical University of Plovdiv, Plovdiv, Bulgaria

¹¹School of Engineering, Ngee Ann Polytechnic, Singapore

¹²Department of Nuclear Sciences and Applications, International Atomic Energy Agency, Vienna Austria

Keywords: *Pandemic, work at home, gender impact, careers women and men, SDG no 5.*

1. Summary

A survey was distributed worldwide to assess main issues that biomedical engineers and medical physicists (academics and professionals) and other similar professionals are facing when working from home during the pandemic. The aggregated data provides demographic and geographic information and analysis by gender. This allows to assess the impact of the pandemic on the careers of women and men.

2. Relevance

The COVID19 pandemic created a new work environment, where many people work from home. Our survey is highly relevant to assess the gender impact of the pandemic.

3. Aim and objective

The pandemic may be having a different impact on the amount of work that women and men can do from home if the major burden of child and other types of care is still predominantly on the shoulders of women. If this is found to be true, then there will be a need for organizations to develop measures that deal with this gender discrepancy.

4. Methods

The survey was created by a committee of IUPESM (International Union for Physical and Engineering Sciences in Medicine); Ethic clearance was by Carleton University. It uses the SurveyMonkey platform and analysis consists of frequency of the demographic parameters and the cross-tabulation of gender with relevant variables describing the impact of work at home. IBM SPSS statistical analysis software was used to analyze the results

5. Results

To date, there were responses from 339 males, 573 females, 9 others and 56 non-disclosed participants from all regions in the world; 75% of males were married and 15% were single, whereas 58% of females were married and 26% were single. More women were working from home during the pandemic (70%) versus 59% of men. More men have access to an office at home (65%) versus 55% for women. Proportion of men spending more than 3 hours on childcare and schooling per day was 10%, while for women it was 17%; for household duties, 7 % of men spent more than 3 hours; for women this was 9%; 38% of men spent between 1-3 hours per day on household duties, while for women it was 44%.

6. Conclusions

It is interesting to note that men participate in childcare and household duties; although this is less hours daily than for women, it is definitely far more than can be found two and three decades ago. Future analysis will look at this last aspect for various regions in the world. It is evident that the burden of childcare and household duties will have a negative impact on the careers of women if the burden is not similar for both sexes, unless policies of employers can provide accommodation and compensation to minimize the negative impact on the professional status and career of men and women who work in these fields.

7. Contact details: Monique Frize, mfrize@gmail.com and Eva Bezak, eva.bezak@adelaide.edu.au

Female labor Force Participation of Middle Eastern and North African Immigrant Women in Canada

Fariba Solati; Murshed Chowdhury; Ashiqul Haque

St. Thomas University, Canada; University of New Brunswick, Canada

Keywords: *Female Labor Force Participation, Middle East and North Africa, Immigrant, Canada, Longitudinal Study*

1. Summary

Access to financial resources and means of production for women are essential in achieving Sustainable Development Goals (UN SDGs) number 5, 8 and 10. Female participation in the labor market not only advances their individual and families' wellbeing, but it also significantly enhances economic growth through increasing economic output and income. Furthermore, access to paid work is a major contributing factor towards women's empowerment. Therefore, this study is appropriate for the Gender Summit Global.

2. Relevance

Women of the Middle East and North Africa (MENA) are among the most educated females in the developing world, yet the Female Labour Force Participation (FLFP) in MENA is the lowest in the world. Studies show that the main reason behind the low FLFP rate is the culture of patriarchy which is deeply rooted in this region impacting all aspects of women's lives. However, studies examining FLFP rates of the international immigrants from MENA countries is scanty, which motivates us to conduct this study.

3. Aims & Objectives

Our goal is to examine whether labour force participation of female immigrants from MENA countries changes after migrating to Canada. What happens to the FLFP rate of the same group of women over time? What factors influence their decision to participate in the labour force?

4. Methods

We use a (unique) merged dataset of the Longitudinal Survey of Immigrants to Canada (LSIC) and the Longitudinal Immigration Database (IMDB). The LSIC covers various socio-economic indicators of immigrant cohort arrived in 2001 and the IMDB traces relevant information of the same group of immigrants until 2016. We use both the descriptive statistics and the binary choice models to observe the trends and patterns of the LSIC cohort of female immigrants from MENA and other regions since their arrival in Canada. We also estimate factors influencing women's decision to participate in the labour force as well as their status of employment (part-time/full-time).

5. Results

Our results clearly reflect that women from the MENA region increase their rates of participation in the labor market in Canada substantially, yet they still have the lowest FLFP in Canada among all other female immigrant groups. Our results for the determinants of FLFP is in line with the existing literature. For example, having training and education increases the FLFP of immigrants irrespective of their region of origin. However, some of the determinants such as the number of children needs further investigation as the results are inconclusive.

6. Conclusions

Our findings assert that different labor and family laws in Canada provide more opportunities for women to participate in the labor market compared to their home countries. The study has significant policy implications as it shows that institutions which hinder women's access to the labor market create obstacles in achieving several objectives of the SDGs.

7. Contact details: Fariba Solati, fsolati@stu.ca

Understanding Female Health Professionals' Decisions to Remain, Return, or Exit the Professional Workforce: Interviews with Doctors, Nurses and Allied Health Professionals

LEONG Li Zi¹, Clarissa TOH¹, and Helen Elizabeth SMITH¹

¹Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore

Keywords: *female, health professionals, workforce, career decisions, work-life balance*

1. Summary

The main caregivers in the home are females, who often leave the workforce if they are unable to balance work and family caregiving demands. With our increasing ageing population caregiving duties extend beyond children to ageing family members also. The “sandwiched” role reduces females’ ability to progress their career alongside caregiving duties, impeding progress towards United Nations’ Sustainable Development Goals 5 (gender equality), 8 (decent work and economic growth), and 10 (reduced inequalities).

2. Relevance

The healthcare workforce, especially in the frontline, is mainly female. To meet the increasing chronic disease burden of an ageing population more health professionals will be needed, and this can be achieved in part by retaining the existing workforce.

3. Aims & Objectives

To identify factors influencing female health professionals’ career decisions, the effectiveness of support available, and the additional initiatives necessary to retain staff currently challenged by work and family demands.

4. Method

We conducted one-to-one in-depth interviews with 57 Singaporean female health professionals (doctors, nurses, diagnostic radiographers, occupational therapists, physiotherapists, and speech therapists). The interviews were audio-recorded, transcribed, and subsequently analysed using a thematic analysis method.

5. Results

Females’ decisions about their careers are influenced by a variety of push and pull factors which can be categorised under four domains: financial, work, family, and personal life. Those who choose to remain often have a strong passion or calling for their job and find meaning and satisfaction in their work, strong relationships with supervisors and/or colleagues, a good fit with their personal and family needs, or need the stable source of income for their family. Those wishing to leave frequently remain until their bond period ends, their family no longer requires their salary, or they find a job that offers better working hours, work-life balance, flexible work arrangements or more interesting work. Negative situations at work (e.g. bullying, lack of respect and understanding from colleagues and patients), most frequently reported in nursing, also contribute to decisions to leave. Women with a greater share of caregiving duties compared to their spouse, and those without supportive environments at work and at home, often give up work to focus on informal caregiving duties. Conversely some working mothers find work provides a space and personal identity outside of being a mother and/or caregiver, and opportunities for adult interactions. Family members, domestic helpers, supervisors, colleagues, and government subsidies are sources of support frequently mentioned. Additional support is needed to help women achieve better work-life separation; there needs to be more job flexibility and opportunities for working part-time; manageable workloads within their stipulated work hours, family-friendly workplaces, enhanced childcare support, both financially (with greater subsidies) and non-financially (improved childcare service quality) to help them worry less about childcare and better focus on their work.

6. Conclusions

Our findings show that work provides benefits to females, as well as demands that necessitate resignation. Female health professionals’ career decisions are often complex and multifaceted, and improvements to current support is needed to better help them manage work and caregiving demands.

7. Contact details: Leong Li Zi, lizi.leong@ntu.edu.sg

New methods for monitoring SDG research and its gender dimensions

Mona Nedberg Østby¹, Kaja Wendt¹, Frøydis Steine¹

¹ The Nordic Institute for Studies in Innovation, Research and Education (NIFU), Oslo, Norway

Keywords: R&D survey, gender dimension, SDG research, methodology

1. Summary

We propose a method for measuring research on all SDGs by expanding the national R&D surveys and mapping gender balance in such research. As a case for considering the gender dimension in SDG research, we use available data on SDG projects in Norway.

2. Relevance

It is relevant to measure the volume of R&D that explicitly targets the SDGs, and to investigate the gender dimension in such research. This would provide a basis for considering the contribution of R&D to reaching the different SDGs.

3. Aims and Objectives

We consider (1) the gender balance within prioritized research fields (see Norwegian White paper on Long-term plan for research and higher education 2020–2028) in the Norwegian R&D survey; and (2) the gender dimension within research projects that target the SDGs. The aim is to develop methods for gathering data on R&D resources targeting SDGs, the gender balance among the researchers and the gender dimension within such research.

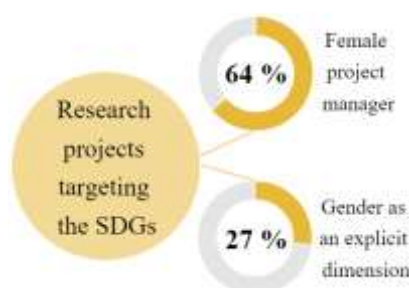
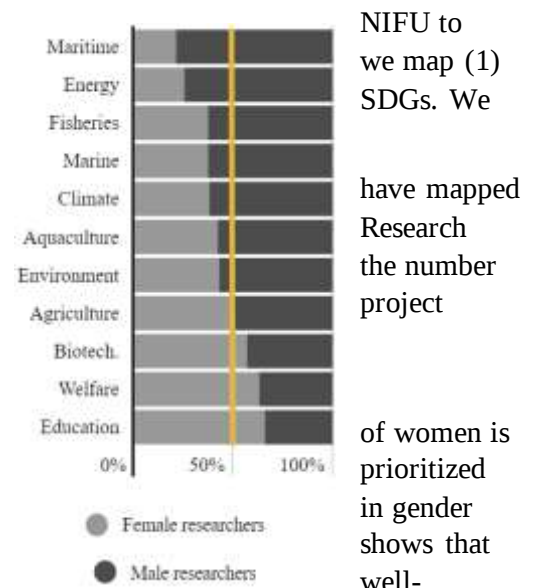
4. Methods

Using Norwegian R&D statistics and follow-up surveys conducted by units that report R&D on the prioritized research fields in the chart, the gender balance within each field, many closely related to several therefore propose to transfer this method to research on SDGs.

To investigate (2) the gender dimension in SDG related research, we the database for academic research projects (CRISTIN – Current Information System) for projects addressing the SDGs. We registered of these projects addressing gender and the gender balance among the managers.

5. Results

First, the gender balance within prioritized research fields: The share at or above the Norwegian average of 38 per cent within seven research fields (see chart). We can expect to find a similar difference representation in research on the different SDGs. This approach including questions on the R&D resources targeting the SDGs in the



established R&D statistics is possible and would offer unique data.

Second, the gender dimension within research targeting the SDGs: A major part of the projects address SDG 1 No poverty, SDG 4 Quality education, SDG 9 Innovation and infrastructure and SDG 12 Responsible consumption. 64 per cent of the project managers are female. Gender is an explicit dimension in 27 per cent of the projects targeting SDG. This approach shows that utilizing available data on research projects is a current method for mapping the gender dimension in SDG projects.

6. Conclusions

There is a lack of data on the amount of R&D resources targeting the SDGs and the gender dimension in such research. Through our study we have presented methods for filling this gap by expanding national R&D surveys and mapping existing project databases.

7. Contact information: Mona Østby, mona.ostby@nifu.no, Kaja Wendt, kaja.wendt@nifu.no, Frøydis Steine, froydis.steine@nifu.no

Community Space Supporting Intergenerational Interaction in Aged Societies: Focus on Preferences of Senior based on Gender

Seunghyun Song¹ and Sun-Young Rieh²

¹ Graduate student, Department of Architecture, University of Seoul, Seoul, Korea

² Professor, Department of Architecture, University of Seoul, Seoul, Korea

Keywords: Aging, Community, Intergeneration, Gender

1. Summary

In the context of the growing number of elderly people being isolated as aging accelerates in aged societies, this study focuses on the role of communities in supporting the social interaction of various generations for the sustainability of these societies. The model of community space needed for an aged society is shared through a case study of a Korean community with the longest-living elderly women among OECD countries, and differentiated needs of seniors based on gender are elucidated.

2. Relevance

Regarding the UN SDG 11 "Make cities and human settlements inclusive, safe, resilient, and sustainable" it was declared through Gender Summit that aging in place embedding social inclusion enables empowerment of elderly in community through a gender frame.

3. Aims & Objectives

This study aims to derive spatial attributes that define sustainable community spaces that promote interaction among different generations so that the elderly can avoid isolation and realize aging in place.

4. Methods

Six community spaces within the old neighborhood of Dobong-gu in Seoul were selected, and qualitative research such as interview and observation were conducted. An analysis framework was prepared based on a literature review and interview. The spatial analysis was conducted based on the analysis frame.

5. Results

The analysis revealed the following characteristics of community spaces where interaction among different generations occurs. First, in order to create a community space available to all age groups, accessibility, safety, transparency, comfort, convenience, and inclusiveness must be ensured. Second, regarding inclusiveness, most users had a favorable view of intergenerational interaction, but they believed that a certain degree of separation is necessary. Third, the preferred space of elderly users varied depending on gender. The female senior preferred safe and comfort spaces, and they tended to interact naturally with others without any special purpose. On the other hand, the male seniors tended to prefer accessible and convenient spaces. They were focused on specific programs, looking for diverse options. On the issue of intergenerational interaction, both elderly men and women showed favorable responses.

6. Conclusion

In order to create community spaces that support the elderly and the active interaction of several generations, accessibility, safety, transparency, comfort, convenience, and inclusiveness must be ensured. Furthermore, the need for privacy must be met through proper division while meeting the need for interactive spaces. It is important to provide various space options in consideration of the preferred spaces of each gender to induce interaction among users without excluding specific gender groups.

7. Contact details: Seunghyun Song, joedy2993@gmail.com

Towards a safe and inclusive street environment: student's perception of pedestrian safety in Sejong City's urban-rural campus town

¹Ji-in Chang, ²Hyunjin An, ³Hye-Young Chung

¹ Graduate School of Smart City Science Management, Hongik University (Sejong Campus), Republic of Korea

² Environmental Planning Institute, Seoul National University, Republic of Korea

³ School of Architectural Engineering, Hongik University (Sejong Campus), Republic of Korea

Keywords: *SDG 11, smart crime prevention solutions, CPTED, street lighting, gender differences*

1. Summary

The goal of SDG 11 (Sustainable Cities and Communities) is to “make cities and human settlements inclusive, safe, resilient, and sustainable”, targeting to “by 2030, provide universal access safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities” (11.7). This study investigates the gendered effect of the physical street environment and smart crime prevention solutions (CCTV, on-site emergency bells, street lighting, etc.) on the perception of pedestrian safety of students in a urban-rural campus town in the outskirts of Sejong Administrative City.

2. Relevance

Even though smart solutions are widely used to solve urban problems and improve quality of life by utilizing ICT technology, gender differentiated evaluation of their effects are scarce. This study examines the gendered effects of a 2019 CPTED (Crime Prevention Through Environmental Design) project involving smart solutions for crime prevention (CCTV, on-site emergency bells, street lighting, etc.) in creating safer and more inclusive street environments.

3. Aims & Objectives

This study examines the street environment and how smart crime prevention solutions are currently installed in an urban-rural campus town. The objective of the study is to show the gendered effects of the street environment and a CPTED project including smart crime prevention solutions.

4. Methods

Research methods include a student survey, an environmental audit, and streetlighting level mapping. Notably, the student survey is a follow-up of a 2018 survey conducted before the implementation of a CPTED project.

5. Results

The results show that the physical street environment and smart crime prevention solutions impact students' perception of pedestrian safety differently according to gender.

6. Conclusions

Findings highlight gender differences regarding the effects of the physical street environment and CPTED projects. They also suggest a need for a gendered perspective in the planning and implementation of smart crime prevention solutions.

7. Contact details: Ji-in Chang, twomay_jiin@hongik.ac.kr

Gender-based Physical Evaluation of Soft Skin for the application of Collaborative Robots

Dongwon Shin, Sungjun Choi, Minhee Son, Caroline Sunyong Lee*

Department of Materials and Chemical engineering, Hanyang University, Ansan-si, Gyeonggi-do, 15588, Republic of Korea

Keywords: *Gender-based preference, Cooperative-robot skin, Emotional materials, Contact angle, Compressive creep test*

1. Summary

In the case of industrial robots, collisions between robots and humans frequently occur, and this lead to human injury or death. With increasing number of robots in the industrial field, it is urgent to solve these problems (Goal 9 of UNSDGs). We have focused on developing soft materials by evaluating their physical properties and preference based on gender, so that physical damage and mental discomfort would be reduced during collision.

2. Relevance

Since the preference of the soft material to be coated on the surface of robots is greatly affected by the gender, it is critical to evaluate the preference on the soft material based on the gender differences. However, its physical properties affecting the preference of the material are very crucial as well.

3. Aims & Objectives

We intend to prevent any critical accidents involving human colliding with collaborative robots through developing soft skin which wraps around the hard surface of the collaborative robot with polymer material having low rigidity and good strength. We have focused on developing soft materials specifically based on gender so that its physical damage and mental discomfort would be reduced during collision.

4. Methods

The most suitable materials used for the skin of a robot, were studied for their physical properties by mixing three types of polymers such as PDMS(Polydimethylsiloxane), Dragon skin®, Ecoflex®, which are harmless to human body with good elasticity. The degree of stickiness of the material was evaluated through the contact angle test, while the elasticity of the material was measured through the compressive creep test.

5. Results

Based on the gender based survey and physical evaluation, it was found that smaller the contact angle, more stickiness it becomes. we have surveyed 225 people to find out about the preference for shoulder/elbow collision according to gender (sex/age). It was found that men prefer skin materials with high strength and low stickiness during collision on shoulder while lower strength material is preferred for the elbow. On the other hand, women prefer materials with less stickiness regardless of strength when collided on either shoulders or elbows

6. Conclusions

This physical evaluation of soft skin based on gender preference would bring a new perspective in robot industries, preparing for 4th industrial revolution.

7. Contact details: Caroline Sunyong Lee, sunyong523@gmail.com

Advancing Human wellbeing: the genderfication of Artificial Intelligence

Dr Athena Vongalis-Macrow

Torrens University, Australia

Keywords: *Artificial Intelligence, Gender, Human wellbeing, workforce 4.0*

1. Summary

Almost 88% of workers in AI are male, and as it is the dominant shaper of work and social organization of the future. Women are being left out of creating the future and securing their rights and privileges. Advancing human well-being, specifically the wellbeing of women, as gender researchers, we need to step outside our research comfort zones to influence AI research and development that are projections of the future.

2. Relevance

As new futures appear and new models of work are rapidly expanding with the introduction of more AI, the social and economic gains are once again, under threat. In a post COVID world, women will bear the brunt of employment downturn and most likely left behind. While this threat is significant, another equally serious threat is through machine learning and more social and economic reliance on AI.

3. Aims & Objectives

The presentation will outline the importance of gender in AI and how it is under researched. This gap in the research means that future development and challenges, such as those addressed through SDGs are under threat of falling further behind. How can we advance human well-being without influencing AI and how it continues to grow to touch every aspect of our life? This is not science fiction; it is the reality of workforce 4.0 and the AI revolution. As gender researchers, we need to step outside our research comfort zones to reach those areas of research and development that are projections of the future. We need to use our considerable knowledge to infiltrate fields that need diversity. AI needs an inclusive agenda to assist in developing human wellbeing.

4. Methods

This is a conceptual/theoretical presentation that examines AI through a gendered lens to suggest how different modes of thinking and theorising of future human needs can help shape the development of AI to improve human, specifically women's wellbeing in the future. The presentation will present a case of how this can be done and the need for more researchers to step outside their comfort zone and apply their considerable knowledge to influencing AI for human welfare projects.

5. Results

Exploration of AI/Gender challenges and opportunities.

6. Conclusions

Gender research has had impact in changing social perceptions and social policies and practices. Gender equality in many nations is a given, so much so that gender is no longer regarded as a pressing social issue. However, as new futures appear and new models of work are rapidly expanding with the introduction of more AI, the social and economic gains are once again, under threat. In a post COVID world, women will withstand the worst of employment downturn, most likely left behind, and suffer decrease in wellbeing. While this threat is significant, equally, machine learning and more social and economic reliance on AI without the inclusion of gender and gender based needs is also a threat.

7. Contact details: Dr Athena Vongalis-Macrow, Athena.vongalis-macrow@laureate.edu.au