

Editorial

Strategy against aging society with declining birthrate in Japan

Women in Workforce: Part-time Employment and Poverty

Japan is facing dynamic changes in its population structure, as the death rate (9.38 deaths/1,000 population) now exceeds the birth rate (8.07 births/1,000 population)¹. The decreasing birth rate has resulted in very rapid population aging, and due to the combination of longevity and a low fertility rate, the government estimates that the total population will decrease from 127,103,388 in 2014 to below 100 million by 2050².

Population aging has major social and economic consequences. In Japan, the average woman now bears only one child during her lifetime. Yet, even as the fertility rate in Japan has fallen to 1.4 children born/woman, women's global labor force participation has been on the rise³. Despite the increase in the number of women entering the Japanese workforce (+250,000 women vs. +10,000 men in 2014 compared to the previous year), a large proportion of women only work part-time (48% for women vs. 17% for men), and approximately half of these part-time female workers are very poor, with an annual income of less than one million Japanese yen³.

Reasons for the Disadvantage

The lack of adequate social infrastructure is a key barrier to Japanese women's full workforce participation, as there are an inadequate number of nurseries to support women who want to balance work and child-rearing^{4,5}. Furthermore, stereotypical gender roles and the belief that men should work outside and women should take care of family remain deeply embedded in Japanese society⁵, and consequently, men are favored when it comes to job and promotion opportunities, making it difficult for women to develop their careers. According to Japan's Longitudinal Survey of Newborns in the 21st Century (2010 Cohort)⁶, approximately 63% of mothers leave the workforce when their first child is born. When they return to the labor force after taking several years off for childrearing, the majority

are employed as non-regular workers and left out of job opportunities in decision-making positions. Consequently, there are very few women in decision-making positions, and Japan ranks far behind the majority of OECD countries on the Gender Gap Index of the World Economic Forum⁷. To encourage women to maximize their potential and contribute to the workforce in Japan's aging society, we need to address this issue seriously.

Women's Health

Life expectancy in Japan is the longest in the world, and women live longer than men; the average life expectancy is 86 years for women and 80 years for men¹. As a result, women experience more years with limited physical capacity, with healthy life expectancy (life expectancy minus years lived in less than full health) estimated at 73 years for women and 70 years for men⁸. To extend healthy life expectancy, the government has launched the National Health Promotion program and has issued basic goals for its implementation⁸. The program aims to extend the number of years individuals live without limitations in daily activities due to health problems through prevention of lifestyle related diseases, improvement and maintenance of social functioning, and development of a positive social environment.

According to the recent National Nutrition Survey⁹, one-fourth of Japanese women in their 20–40 s are underweight (defined as body mass index <18.5 kg/m²), and being underweight in childbearing age is thought to cause adverse health outcomes after menopause. The prevalence of osteoporosis is especially high among elderly postmenopausal women, increasing the risk of hip and spine fractures, which contribute to the particularly high morbidity in this population¹⁰. One cohort study of 1,614 postmenopausal Japanese women followed for 6.7 years showed that underweight was a profound risk factor for fractures at different sites¹¹. More active nutrition guidance may be required for women earlier in their life course, and more research is needed to accumulate scientific evidence about diet and physical activity.

Maternal and Child Health

According to the developmental origins of health and disease (DOHaD) hypothesis¹²⁾, early life, including conception, the prenatal period, infancy, and childhood, may have long-term impacts on lifelong health and disease risk. Factors influencing early life include the uterine environment, which, in underweight mothers, may interact with genotypic variations to increase the infant's risk of lifestyle-related disease such as diabetes or hypertension later in life. A recent epidemiological study in Japan¹³⁾ suggested that maternal underweight may be associated with increased risk of low birth weight (LBW). The prevalence of LBW in Japan is higher than the OECD average (9.6% vs. 6.8%), and there is a growing body of literature demonstrating that LBW infants face increased risks of lifestyle-related disease in adulthood¹⁴⁾. In this regard, to prevent adverse health outcome in infants, more research is needed to investigate the impact of pre-pregnancy maternal nutritional status on health outcomes in children. In particular, additional studies are needed to clarify the association of maternal weight gain with pregnancy outcomes and to establish a cut-off point for maternal weight gain because guidelines issued by the authorities such as the Ministry of Health, Labor and Welfare and the Society of Obstetrics and Gynecology were based on a limited number of references, most of which were conducted outside Japan^{15, 16)}.

Changes have also occurred in family structure, with greater prevalence of nuclear families and a large number of single mothers (more than one million based on 2010 vital statistics). The growing diversity in family structure has meant that families are less connected to broader community and social networks, with impacts on lifestyle and belief systems. Some parents raise their children based on beliefs that may not always convey accurate information and that therefore have the potential for adversely affecting child health. In the past decade, child abuse has increased fivefold, and child consultation centers handled 66,701 cases related to child abuse in the 2012 fiscal year¹⁷⁾. Health professionals should take active measures to support people and organizations dealing with child abuse based on scientific evidence in this field.

Workforce Population Structure Change and Economic Perspectives

Finally, to support the population in an aging society, many older persons in Japan still need to work. Currently people over 65 years of age comprise 25% of Japan's

population, and 42.7% of those in their 60s and 13.9% of those aged 70 years or older are still in the workforce. The working age population (15–64 years old) in Japan is projected to decline continuously from 63% in 2010 to below 50% by 2060¹⁾. The government of Japan has responded to concerns about the pressures placed by these demographic changes on the economy and social services with policies intended to make the elderly more active in society. Mounting labor shortages in the 1980s and 90s led many Japanese companies to increase the mandatory retirement age from 55 to 60 or 65, and today, many allow their employees to continue working after official retirement. Medical costs in Japan exceeded 40 trillion in 2013 (8.29% of GDP), and 57% of the expenditures were for persons aged 65 years or older¹⁸⁾. The leading causes of death are cancer, heart disease, and cerebrovascular disease, and for these groups of people to stay healthy and in workforce, it is extremely important to extend healthy life expectancy and prevent lifestyle-related diseases.

Aims and Scope of this Special Issue

This special issue focuses on women's health, children's health and workforce health. First, the authors identify health problems in women associated with employment status and occupational stress. Women are more likely to be employed as part-time and are generally underrepresented in Japan, and to perceive work-related stress but organizational fairness for gender equity help mitigate psychological burnout among women. Second, the authors discuss negative determinants of poor health in children including maternal factors of childbearing at advanced ages and low maternal weight, and child-rearing environment in Japan's nuclear families. The authors who advocate the DOHaD hypothesis, where healthy life expectancy is determined by the environment in utero, report several epidemiologic studies on this theme. Third, the authors analyze the labor force participation of middle-aged and older workers as well as workers with diseases such as cancer. The editors expect that the collection of studies included in this special issue will help society to tackle with aging society with declining birthrate now Japan faces.

In addition to these factors, it has long been pointed out that labor productivity in Japan is low. To compensate for low productivity, long work hours and self-dedication have been imprinted in Japanese industrial culture, and the birth rate is now considered to be linked to such workplace attitudes. Indeed, the parental leave among men is still below 3%. We should therefore change industrial culture

to promote work–life balance and personal life values, while also introducing social support systems to encourage women to have children. Given the importance of a conceptual transition, we should bear in mind that innovation is a source of labor productivity. In fact, the United States, which has contributed major innovations in the 20th century, has also maintained high birthrates. The maintenance of such high birthrates is attributable to several socio-behavioral factors: early marriage, immigration, and high selectivity of career pathway. It is well known that the vitality of industry, which can be measured by innovative energy, is linked to these socio-behavioral factors. Thus, we cannot ignore the issue of promoting fundamental reform of occupational health to enhance innovation at the level of the individual worker. A paradigm change from disease prevention toward the facilitation of talent development is obviously indispensable to this fundamental reform. Due to space limitations in this special issue, we cannot solve all the problems at present, but would like to continue our discussion about the strategy against aging society with declining birthrate in Japan.

Reference

- 1) Ministry of Internal Affairs and Communications (2014) Vital Statistics.
- 2) National Institute of Population and social Security Research (2012). Population and Projection for Japan: 2011 to 2060. http://www.ipss.go.jp/site-ad/index_english/esuikei/gh2401e.asp. Accessed April 21, 2016.
- 3) The Ministry of International Affairs and Communication (2015) Labour Force Survey.
- 4) Japan Ministry of Health, Labour and Welfare (2016) Children and Childrearing.
- 5) Gender Equality Cabinet Office, White paper (2013) “FY2003 Annual Report on the State of Formation of a Gender-Equal Society” and “Policies to be Implemented in FY2004 to Promote the Formation of a Gender-Equal Society”.
- 6) Japan Ministry of Health, Labour and Welfare (2010) Longitudinal Survey of Newborns in the 21st Century.
- 7) World Economic Forum (2016) Gender gap index.
- 8) Japan Ministry of Health, Labour and Welfare (2016) A Basic Direction for Comprehensive Implementation of National Health Promotion.
- 9) National Institute of Health and Nutrition (2011) The National Health and Nutrition Survey.
- 10) North American Menopause Society (2006) Management of osteoporosis in postmenopausal women: 2006 position statement of The North American Menopause Society. *Menopause* **13**, 340–67, quiz 368–9. [[Medline](#)] [[CrossRef](#)]
- 11) Tanaka S, Kuroda T, Saito M, Shiraki M (2013) Overweight/obesity and underweight are both risk factors for osteoporotic fractures at different sites in Japanese postmenopausal women. *Osteoporos Int* **24**, 69–76. [[Medline](#)] [[CrossRef](#)]
- 12) Wadhwa PD, Buss C, Entringer S, Swanson JM (2009) Developmental origins of health and disease: brief history of the approach and current focus on epigenetic mechanisms. *Semin Reprod Med* **27**, 358–68. [[Medline](#)] [[CrossRef](#)]
- 13) Murai U, Nomura K, Kido M, Takeuchi T, Sugimoto M, Rahman M (2016) Pre-pregnancy body mass index as a predictor of low birth weight infants in Japan. *Asia Pac J Clin Nutr* (In press).
- 14) Visentin S, Grumolato F, Nardelli GB, Di Camillo B, Grisan E, Cosmi E (2014) Early origins of adult disease: low birth weight and vascular remodeling. *Atherosclerosis* **237**, 391–9. [[Medline](#)] [[CrossRef](#)]
- 15) Japan Ministry of Health, Labour and Welfare (2005) Guide for mothers to feed infants [JUNYUU · RINYUU NO SHIEN GAIDO].
- 16) Nakabayashi M (1999) Nutrition guideline of pregnancy-induced hypertension [NINSHINCHUUDOKUSHO NO EIYOKANRISHISHIN]. *Acta Obstet Gynaecol Jpn* **51**, N-507-10 [Guideline].
- 17) Japan Ministry of Health, Labour and Welfare (2016) Definition and Current statistics of Child Abuse.
- 18) Japan Ministry of Health, Labour and Welfare (2016) Medical Expense.

Kyoko NOMURA, MD, MPH, PhD

Department of Hygiene and Public Health, Teikyo University School of Medicine, Japan

Akio KOIZUMI, MD, PhD

Department of Health and Environmental Sciences, Kyoto University, Graduate School of Medicine, School of Public Health, Japan