Health development of children for future generations

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I would like to appreciate you for your kind support after The East Japan Great Earthquake Disaster occurred on March 11, 2011.
1) National medical center for children and mothers (A)
2) National Research Institute for Child Health and Development (B)
Toho-movie studio is in the neighborhood of NCCHD.

Godgilla was produced here.

Birthday: Nov 3, 1954

We are producing Human ES and iPS cells in NCCHD.
What is health? How do we improve the child health?

WHO defined health as “a state of complete physical, mental and social well-being and not merely the absence of diseases.”

Child health is more than survival, absence of diseases, but also about achieving the full developmental potential of each child.

Preventing and curing diseases is but one of many tasks for improving child health, nevertheless an important task at individual level.

Political support and universal implementation of evidence-based cost-effective interventions to improve child health is the key to success at societal level.
1. Neonatal and infant mortality rate: Are their low level good enough for child health?
Historical changes of neonatal and infant mortality rate (NMR, IMR / 1,000 births) in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>NMR</th>
<th>IMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1897</td>
<td>0.9</td>
<td>1.9</td>
</tr>
<tr>
<td>1911</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1925</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1945</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td></td>
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</tbody>
</table>

The cause of infant death
1st: Congenital anomalies and chromosomal abnormalities
2nd: Perinatal cardiopulmonary disorders
3rd: Sudden infant death syndrome

IMR = 1.9
NMR = 0.9
Recent history of maternal mortality rate: international comparison (per 100,000 live birth)

<table>
<thead>
<tr>
<th>Country</th>
<th>MMR</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>JAPAN</td>
<td>2.8</td>
<td>2013</td>
</tr>
<tr>
<td>USA</td>
<td>20.6</td>
<td>2013</td>
</tr>
<tr>
<td>France</td>
<td>5.7</td>
<td>2013</td>
</tr>
<tr>
<td>Germany</td>
<td>4.6</td>
<td>2013</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.4</td>
<td>2013</td>
</tr>
<tr>
<td>Switzerland</td>
<td>3.7</td>
<td>2013</td>
</tr>
<tr>
<td>U.K.</td>
<td>5.0</td>
<td>2013</td>
</tr>
</tbody>
</table>
Why could Japan get the very low infant mortality rate (IMR) in the world?

<potential explanations>

1. We have <strong>n</strong>ational <strong>h</strong>ealth <strong>i</strong>nurance <strong>s</strong>ystem which covers all peoples.
2. It is easy for the peoples to <strong>a</strong>ccess to the clinics and hospitals in almost all areas in Japan.
3. We use <strong>M</strong>aternal and Child Health (MCH) Handbook.
4. We provide population-based <strong>s</strongcreening <strong>s</strongystem and health check-up system for all children.
5. We have a high literacy rate.

Source: Health and welfare for families in the 21st century, by Kiely M, Wallace HM, Nakamura Y et.al., Jones and Bartlett Pub., 1999 (partly changed)
Maternal and Child Health (MCH) program in Japan

Pregnancy  Delivery  Newborn  1 year  6 year

★

MCH Handbook

Classes for expecting mothers (parents)
Antenatal care and check-up for pregnant women (14 visits)

Home visiting for the newborn
Treatment and care for premature baby

Health checkups and Immunization for children
Medical support for the handicapped and chronic diseases
History of Maternal and Child Health (MCH) handbook in Japan

- 1942 Handbook for pregnant women was introduced from Freiburg Univ. in Germany.
- 1947 Law of Child Welfare was enacted.
- 1948 Mother and Child Handbook* (20 pages)
- 1966 Law of Maternal and Child Health was enacted.
- 1996 MCH Handbook was upgraded (72 pages).
- 2012 MCH Handbook was renewed.

MCH handbook is provided to pregnant women for free when they report their pregnancy to the local government.

* The original Mother and Child Handbook (in 1948)
I. Information about social services in the local area

II. Systemic recording forms

  a) For a mother
     1) Certificate of birth registration
     2) Pregnancy health reference
     3) Courses of pregnancy
     4) Record of delivery
     5) Mother’s postpartum condition

  b) For a new child
     1) Record of child’s development
     2) Record of health check-up for the baby (1, 3 or 4, 6, 9, 12, 18, 24, 36, 48, 60, and 72 months)
     3) Immunization record for the child
     4) Record of childhood illness
Japan: commonly used it since 1948.

Bhutan, East Timor, India, Indonesia, Cote d’Ivoire, Niger, Lao PDR, Mongolia, Myanmar, Palestine, Philippines, Senegal, South Korea, Tajikistan, Thailand, Tunisia, and Vietnam: commonly use it now.

Afghanistan, Bangladesh, Bhutan, Brazil, Cambodia, Dominican Republic, Madagascar, Peru, and USA (Utah, etc.): partly developed it in the projects (Governments/JICA/UN/NGOs).

Brunei, Nigeria, and Turkey: plan to use it as a pilot trial.
The concept of MCH Handbook form are not fully accepted by western countries: They believe medical and health records for the child and mother should be independent.
New system for pre and postpartum care support center like Finnish “Neuvola” started in Japan in 2017

“Neuvola” is a counselling bureau for maternal and child health in Finland functioning for over 50 years.

Japanese Government starts child care support center called as “Japanese Neuvola” in 720 places in Japan this year.

This center supports pregnant females who needs pre and postpartum care.
2. Psychosocial evaluation and assistance in the youth; it is not enough in Japan
Specific negative statements about personal well-being in 15-year-old adolescents in 24 OECD nations

Nearly 30% of young peoples in Japan agreed that “I feel lonely”. It is less than 10% in most OECD nations.

Human connectedness is losing in many Japanese families. We do not have the effective system to check the psychosocial issues in children and adolescents in Japan.
Children and youth as a biopsychosocial existence
Health supervision visits are provided 7 times during infancy, 5 times between 12 and 30 month old, and once a year between 3 and 21 years old.

- Individual examination
- Basically obligatory
- 30 minutes for each visit
- Health insurance covers the cost ($150 per each visit)
We have no "Health supervision visit" in Japan. We have health examination at school.

1. Schoolchildren (6 – 18 years old) receive physical examination every spring at school (mass checkup).
2. A school doctor takes only one or two minutes to see one child.
3. Children can not discuss their psychosocial issues with a school doctor. Each school has a counselor. However, children do not want to visit her for advice, because they do not know her very well.
4. School counsellor stays at school shortly a day.
The HEEADSSS psychosocial interview is a practical strategy. Pediatricians can use this to evaluate how their teenaged patients are coping with the pressures of daily living, especially now in the context of electronic and social media.

**H**-home situation

**E**-education/employment

**E**-eating behavior and body image

**A**-activities (sports, music, art, drama, leadership and volunteer activities)

**D**-drugs, alcohol, tobacco, and other recreation drugs

**S**-sexual activity

**S**-suicide/depression

**S**-safety from injury and violence
The first priority is to address the concerns of the adolescent and parents. Next, the following additional topics are also priorities for discussion.

<examples>
Learn to manage conflict nonviolently; walk away if necessary. Avoid risky situations. Call for help if things get dangerous.

When dating or in sexual situations, no means NO. No is OK.
Don’t use tobacco/e-cigarettes; talk with me if you are worried about family member drug/alcohol use.

Making and keeping friends is an important life skill.

Take responsibility for schoolwork; follow family rules; ask for help when needed.

etc.
<We have a goal in the future>

We would like to set the system to examine and support the children and youth biopsychosocially in Japan.
3. Transition issues
## 5 year survival rate in childhood cancer diseases

<table>
<thead>
<tr>
<th>Year</th>
<th>Survival rate (%)</th>
<th>Disease Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975-1977</td>
<td></td>
<td>Hodgkin lymphoma</td>
</tr>
<tr>
<td>1978-1980</td>
<td></td>
<td>Wilms tumor</td>
</tr>
<tr>
<td>1981-1983</td>
<td></td>
<td>ALL</td>
</tr>
<tr>
<td>1984-1986</td>
<td></td>
<td>Brain tumor</td>
</tr>
<tr>
<td>1987-1989</td>
<td></td>
<td>Soft tissue tumor</td>
</tr>
<tr>
<td>1990-1992</td>
<td></td>
<td>neuroblastoma</td>
</tr>
<tr>
<td>1993-1995</td>
<td></td>
<td>AML</td>
</tr>
<tr>
<td>1996-1998</td>
<td></td>
<td>Bone tumor</td>
</tr>
<tr>
<td>1999-2001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002-2005</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006-2012</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ALL cancers**

5 year survival rate in overall childhood cancer is 80%.
The adolescent patients with difficult diseases are increasing and they still need care in Japan.

The recent medical progress can save the children with difficult diseases such as congenital heart diseases, malignancies, and premature babies.

Five year survival rate of hypoplastic left heart syndrome is more than 60%, and overall childhood cancer is 80%. However, many of the survivors suffer from various complications.
For the adolescent and adult survivors with difficult diseases

The numbers of adult patients with congenital heart diseases are now over 500,000, and the numbers of adults who suffered from childhood malignancies are over 110,000 now in Japan.

The joint team (Japan Pediatric Society and Ministry of Health, Labors and Welfare) prepared the guidelines to support and take care of them.
4. Care for the children and youth with special health care needs
Children and youth with chronic diseases including asthma, obesity, diabetes, mental disorders, congenital heart anomalies, malignancies, chronic renal diseases are called as children and youth with special health care needs.

It accounts 17% of adolescents in USA and 13% in Japan.

Figure 1. Children with special health care needs, prevalence by age group.
# Changes of the incidence of low birth weight infants and baby’s mean birth weight in Japan

<table>
<thead>
<tr>
<th>Year</th>
<th>1975</th>
<th>1990</th>
<th>2000</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total(100%)</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>BW&lt;2,500g</td>
<td>5.1%</td>
<td>6.3%</td>
<td>8.6%</td>
<td>9.5%</td>
</tr>
<tr>
<td>BW&lt;1,500g</td>
<td>0.3%</td>
<td>0.5%</td>
<td>0.7%</td>
<td>0.8%</td>
</tr>
<tr>
<td>BW&lt;1,000g</td>
<td>0.1%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean birth weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>boy</td>
</tr>
<tr>
<td>girl</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

This is probably caused by the increase of late childbearing in Japan. Low birth weight is due to intrauterine growth restriction.
Intrauterine growth restriction will produce various disorders in adult

<table>
<thead>
<tr>
<th>Metabolic</th>
<th>Nonmetabolic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor postnatal growth</td>
<td>Chronic lung disease</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>Immunodeficiency</td>
</tr>
<tr>
<td>Hypertension</td>
<td>Neurodevelopmental delay</td>
</tr>
<tr>
<td>Insulin resistance</td>
<td>Attention deficit disorder</td>
</tr>
<tr>
<td>Renal insufficiency</td>
<td>Schizophrenia</td>
</tr>
</tbody>
</table>
Care and support for adolescents and youth with difficult diseases are one of the most important issues for pediatricians and related doctors in Japan.
5. To the social determinants of child health
Capital in the twenty-First century (Thomas Piketty, 2013)

In the capitalist societies for recent 400 years,

- **Return on capital**: 4 – 5 % a year
- **Economic growth rate**: 1 – 2 % a year

\[ r > g \]

1) The capital tends to accumulate faster than the rate of economic growth in capitalist societies.
2) The unequal distribution of wealth in the developed world has become a significant issue in recent years.
Child poverty is on the rise in Japan: this can produce social exclusion

1) 13.9% of Japanese children under 17 years old now live in poverty. Childhood poverty rate is 11% in UK and 22% in U.S.A..

2) Poverty denies children their rights. It blights their lives with ill health, malnutrition, and impaired physical and mental development. It saps their energy and undermines their confidence in the future (social exclusion).

3) Poverty produces child abuse.
The poverty rate in fatherless families in the world

The poverty rate in fatherless families is extremely high in Japan.

OECD Family Database
Promotion of Poverty Program for Children Act was enacted in 2015 in Japan to reduce the poverty rate of children into less than 10% by 2021.

4 major actions

1. Education support
2. Livelihood support
3. Support for job seekers (parents)
4. Financial support

Support project for children’s future is set in Nippon Foundation as a donation center.

However, Japanese government can not afford enough funding.
1) The UK’s 13-year war on childhood poverty has cut their childhood poverty rate from 30% in 1994 to 11% in 2010.

2) USA has made policy decisions to support the elderly; Their poverty prevalence dropped from 35% in 1959 to 9% in 2010.
| Support for the family & mother and children | Maternal and child health
Child development
Education for adolescents |
| Community and individual support | Housing
End of fuel poverty
Support for the vulnerable groups
Cleaner, safer, greener environment |
| Prevention of diseases and providing effective care | Decrease, early finding and action to the risk (smoking, undernutrition, obesity, injury, infections, etc) |
| Addressing the underlying determinants of health | Providing jobs to reduce the child poverty
Social housing
Better public transport
Education to abolish adult illiteracy |
1) Child poverty affects nearly 15 million US children. Pediatricians address social determinants of child health as part of routine care in USA.

2) Pediatricians can identify social needs in the poor families and connect the families to community resources in the context of well-child care.
6. A national campaign plan for maternal and child health since 2001 in Japan
The national campaign plan

“Healthy Parents and Children 21”

between 2001 and 2014 (the first phase)

This plan aimed to make a society where every child could grow up healthy.

1. This plan was promoted by all the societies, companies, NPO, and research institutes concerned.

2. It defined the future directions, goals, and indicators for the actions in maternal and child health in the 21st century.

3. The achievement of the first phase plan was evaluated in 2015. This plan is now in the second phase (2015 - 2024).
The goals in this campaign plan
(The first phase: 2001-2014)

<Three General goals>
1. Seamless health support for pregnant women, newborns and toddlers
2. Health support for school-aged children including of adolescence and youth
3. Promotion of the local community that promote the growth of children and youth

<Two Target goals>
1. Support of the families that have difficulties in raising their children
2. Intervention starting at pregnancy to prevent child abuse
The goals finally achieved or improved in 81%.

<table>
<thead>
<tr>
<th>Result</th>
<th>No. of items (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved</td>
<td></td>
</tr>
<tr>
<td>A) Goals achieved</td>
<td>20 items (27.0%)</td>
</tr>
<tr>
<td>B) Goals Improved, but not achieved achieved</td>
<td>40 items (54.1%)</td>
</tr>
<tr>
<td>C) Goals without changes</td>
<td>8 items (10.8%)</td>
</tr>
<tr>
<td>D) Goals not improved</td>
<td>2 items (2.7%)</td>
</tr>
<tr>
<td>E) Goals impossible to evaluate</td>
<td>4 items (5.4%)</td>
</tr>
</tbody>
</table>
Goals achieved or improved in the first phase

Decreased prevalence of
abortion in the teenagers
sexually transmitted infections in the teenagers
emaciation in 15 year old females
obese children
tobacco consumption in the teenagers
alcohol drinking in the teenagers

Increased prevalence of
keeping knowledge of anticonception in the teenagers
setting a counsellor at junior high schools
Two goals not improved in the first phase:

1) Prevalence of premature babies

Rate of low birth weight infant (less than 2500g)

Rate of very low birth weight infant (less than 1500g)
Two goals not improved in the first phase:

2) Suicide prevalence in the youth

Annual Changes in Suicide Death Rate (10-14 years olds)

Annual Changes in Suicide Death Rate (15-19 years olds)
Two new major goals in **the second phase** of the plan (2015 - 2024)

1. Every people born in Japan can equally receive the standard of maternal and child health services and life protections.

2. Maternal and child health services make extend to all the peoples regardless of differences and diversity in individuals and family environment, including of diseases, disabilities and financial situations.
7. Governmental financial support for the children and youth with chronic specific diseases
1. Japanese government started this financial support for the patients with 9 congenital metabolic diseases in 1968.
2. 722 pediatric chronic diseases are specified in 2017. 130,000 children and youth are now supported.
3. Japan Pediatric Society and the research project funded by The Ministry of Health, Labors and Welfare worked together to specify the diseases.
4. Medical bills for the patients under 20 years old are supported according to the severity of the specified diseases.
5. Data of the patients and disease conditions are collected and statistically analyzed every year.
6. This support is very helpful to the patients and families.
For the bright futures of the mother and children in the world