Occupational Health & Medicine in South Korea

Opening Lecture

In the Opening Ceremony, Poet Ko Un will deliver an opening lecture on the importance of safety and health from the perspective of humanity and philosophy.

Marianna Virtanen, Research professor from Finland, will give a speech on psychosocial burden to health, new global epidemic of modern work life.
What work takes place in Korea?

- South Korea achieved very rapid economic development between the 1960s and 1990s, with a focus on manufacturing, during which time primary industries strikingly dwindled.

- Recently, Korea's economy has begun to change from one that is manufacturing based to an economy that is essentially service based.

- In the last 20 years, small businesses have greatly increased in number and the proportions of working females and aged workers have increased to 49% and 27% of the total workforce, respectively.
Major Statistics in South Korea

_Labor Workforce_

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economically active population</strong></td>
<td>24,394</td>
<td>25,099</td>
<td>25,873</td>
</tr>
<tr>
<td><strong>Participation rate</strong></td>
<td>60.8</td>
<td>61.1</td>
<td>61.5</td>
</tr>
<tr>
<td><strong>No. of employed</strong></td>
<td>23,506</td>
<td>24,244</td>
<td>25,066</td>
</tr>
<tr>
<td><strong>Employment Rate</strong> 1)</td>
<td>58.6</td>
<td>59.1</td>
<td>59.5</td>
</tr>
<tr>
<td>- Male</td>
<td>70.1</td>
<td>70.5</td>
<td>70.8</td>
</tr>
<tr>
<td>- Female</td>
<td>47.7</td>
<td>48.1</td>
<td>48.8</td>
</tr>
<tr>
<td><strong>Youth</strong> 2)</td>
<td>40.5</td>
<td>40.5</td>
<td>39.7</td>
</tr>
<tr>
<td>- Aged 3)</td>
<td>60.4</td>
<td>62.1</td>
<td>64.3</td>
</tr>
<tr>
<td><strong>Employment Rate (OECD standard)</strong> 4)</td>
<td>62.9</td>
<td>63.8</td>
<td>64.4</td>
</tr>
<tr>
<td>- Male</td>
<td>73.6</td>
<td>74.5</td>
<td>74.9</td>
</tr>
<tr>
<td>- Female</td>
<td>52.2</td>
<td>53.1</td>
<td>53.9</td>
</tr>
</tbody>
</table>

1) Employment rate = (employed persons aged 15 and over/population aged 15 and over)x100
2) Youth : people aged 15~29
3) Aged : people aged 55~64
4) Employment Rate(OECD standard) = (employed people aged 15~64/population aged 15~64)x100

Source : National Statistical Office (www.nso.go.kr) [Economically Active Population Survey]
## Major Statistics in South Korea

### Wages & Working hours

#### Minimum Wage

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Wage (Per Hour)</td>
<td>4,000</td>
<td>4,320</td>
<td>4,860</td>
<td>5,210</td>
</tr>
<tr>
<td>Increase Rate (year-on-year)</td>
<td>6.1</td>
<td>5.1</td>
<td>6.1</td>
<td>7.2</td>
</tr>
<tr>
<td>No. of Workers applied</td>
<td>15,882</td>
<td>16,479</td>
<td>17,510</td>
<td>17,734</td>
</tr>
</tbody>
</table>

#### Average monthly Working Hours

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2011</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>All employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total hours</td>
<td>176.1 (-0.3)</td>
<td>176.3 (-0.2)</td>
<td>172.6 (-1.0)</td>
</tr>
<tr>
<td>Regular employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total hours</td>
<td>184.4 (-0.2)</td>
<td>182.1 (-1.4)</td>
<td>178.1 (-1.0)</td>
</tr>
<tr>
<td>Contractual hours of work</td>
<td>169.3 (0.2)</td>
<td>168.5 (0.1)</td>
<td>165.6 (-1.0)</td>
</tr>
<tr>
<td>Overtime hours</td>
<td>15.1 (-5.0)</td>
<td>13.6 (-17.1)</td>
<td>12.5 (-2.3)</td>
</tr>
<tr>
<td>Temporary/daily employees</td>
<td>119.3 (-3.7)</td>
<td>122.5 (6.2)</td>
<td>122.5 (0.2)</td>
</tr>
</tbody>
</table>

*Note:* Figures in ( ) are year-on-year increase rates.
What are the key occupational diseases?

- Traditional occupational diseases such as chemical intoxication, noise-induced hearing loss and pneumoconiosis were the main compensated occupational diseases until the mid-1990s.

- However, work-related musculoskeletal disorders have recently become prominent and comprise about half of all compensated occupational diseases at the present time.

- Korea's workers’ compensation law covers a wide range of work-related cerebrovascular and cardiovascular diseases, which form one-third of compensated occupational diseases, contrary to what is seen in other countries.

- Mental health problems and asbestos-related diseases are not major work-related health problems at present, but increasing trend.
**Major Statistics in South Korea**

**Industrial Accident**

<table>
<thead>
<tr>
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<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of employees (in thousand)</td>
<td>13,885</td>
<td>14,199</td>
<td>14,362</td>
<td>15,548</td>
<td>15,449</td>
</tr>
<tr>
<td>No. of the injured</td>
<td>97,821</td>
<td>98,645</td>
<td>93,292</td>
<td>92,256</td>
<td>91,824</td>
</tr>
<tr>
<td>No. of deaths</td>
<td>1,916</td>
<td>1,931</td>
<td>1,860</td>
<td>1,864</td>
<td>1,929</td>
</tr>
<tr>
<td>Accident rate(%)</td>
<td>0.70</td>
<td>0.69</td>
<td>0.65</td>
<td>0.59</td>
<td>0.59</td>
</tr>
<tr>
<td>No. of deaths per 10,000 people</td>
<td>1.38</td>
<td>1.36</td>
<td>1.30</td>
<td>1.20</td>
<td>1.25</td>
</tr>
</tbody>
</table>

*Source: Ministry of Employment and Labor (www.moel.go.kr)*

**Injuries**

- Number of injuries and illnesses
- Rate of injuries and illnesses

**Diseases**

- Number of occupational diseases and illnesses
- Morbidity rate

Number and rate of injuries and illnesses by year

Number of occupational diseases and illnesses and morbidity rate by year
Governmental Organization for Occupational Safety and Health

Ministry of Employment & Labor

Industrial Accident Prevention and Compensation Bureau

Industrial Accident Prevention Policy div.
Industrial Accident Compensation Policy div.
Occupational Safety div
Occupational Health div.
Chemical Accident Prevention div.

KCOMWEL
Compensation
Worker’s Compensation Act

KOSHA
Prevention
Occupational Safety & Health Act

Worker Injury
Ministry of Employment and Labor
KOSHA Industrial Accident Prevention
KCOMWEL Worker’s Compensation Insurance

- Medical Care Benefits
- Temporary Disability Benefits
- Injury-Disease Compensation Annuity
- Permanent Disability Benefits
- Nursing Benefits
- Survivors Benefits & Funeral Expenses
- Average Wages
Korean Society of Occupational and Environmental Medicine

Annals of Occupational and Environmental Medicine

Editor’s profile

Sang Beek Koo is a Professor of Occupational and Environmental Medicine at Yonsei University Wonju College of Medicine. His research focuses on occupational epidemiology, job stress and work-related diseases. Professor Koo also plays a major role in community- and industry-based job cohorts in South Korea.

About KSOEM

The Korean Society of Occupational and Environmental Medicine (KSOEM) comprises more than 1,000 physicians and public health professionals specializing in the field of occupational and environmental medicine. KSOEM is dedicated to promoting the health of workers by providing occupational medical examinations.
1. The effects of individual, occupational, and supportive factors on successful return to work using a structural equation model  
   Lee J, Choi M, Park SH, Kim HR and Lee HE

2. Association of cadmium with diabetes in middle-aged residents of abandoned metal mines: the first health effect surveillance for residents in abandoned metal mines  

3. Case report of renal cell carcinoma in automobile manufacturing factory worker due to trichloroethylene exposure in Korea  
   Lee JH, Kim I, Seok H, Park I, Hwang J, Park JO, Won JU and Roh J

4. French good practice guidelines for medical and occupational surveillance of the low back pain risk among workers exposed to manual handling of loads  
   Petit A, Fassier JB, Rousseau S, Mairiaux P and Roquelaure Y

5. Decline in non-smoking workers’ urine cotinine levels after increased smoking regulation in Korea  

6. Minnesota multiphasic personality inventory as related factor for post traumatic stress disorder symptoms according to job stress level in experienced firefighters: 5–year study  
   Chung IS, Lee MY, Jung SW and Nam CW
Law for Worker’s occupational Health

- Workplace Environment Measurement
- Occupational Medical Examination
- Investigation for Occupational Disease
- F/up Exam. for Exposed worker To Carcinogens

Private occupational health service institutions

- Work Restriction To Diseased
- Working hours Restriction
- Employment Restriction for Certified

14 Occupational Carcinogens

Occupational health professionals
Article 24 (Health Measures)

(1) An employer shall take measures necessary for the prevention of the following health problems when carrying on business:

1. Health problems caused by raw materials, gas, vapor, dust, fume, mist, oxygen-deficient air, pathogens, etc.;
2. Health problems caused by radiation, harmful rays, high temperature, low temperature, ultrasonic waves, noise, vibration, abnormal air pressure, etc.;
3. Health problems caused by gas, liquid, residue, etc. discharged from the workplace;
4. Health problems caused by the monitoring of gauges, the operation of computer terminals, precision work, etc.; and
5. Health problems caused by simple and repetitive work or work which requires excessive physical labor; and
6. Health problems caused by failures to maintain the proper standards of ventilation, lighting, illumination, thermal insulation, dampproofing, cleaning, etc.

(2) The health measures to be taken by an employer under paragraph (1) shall be prescribed by the Ordinance of the Ministry of Employment and Labor. <Amended by Act No. 10339, Jun. 4, 2010> <This Article Wholly Amended by Act No. 9434, Feb. 6, 2009>
How is occupational health provided?

- The **Industrial Safety and Health Act** mandates that employers conduct **periodic occupational medical examinations** and carry out **workplace environmental measurement**, and provide **health management services**. These are the three principal components of occupational health services in Korea.

- However, these occupational health services are provided mainly by **private occupational health service institutions outside the workplace**; very few workplaces (ex. very large sized company > 2000 workers) have their own services.

- **Occupational medical examinations** for workers exposed to any of **179 nominated potential work hazards** must be provided within paid working hours at the employers’ expense.
Who provides the services?

- There are >600 certified occupational medicine specialists in South Korea.

- Industrial hygienists in certified private occupational health service institutions provide workplace environmental measurement.

- Health management services in workplaces are provided by physicians, industrial hygienists or nurses either employed by the companies or by the certified private occupational health service institutions.
How is occupational health represented?

- The Korean Society of Occupational and Environmental Medicine has almost 840 members including occupational medicine specialists and trainees. The organization provides training and organizes scientific meetings.

- There is also the Korean Society of Occupational and Environmental Hygiene, representing 300 industrial hygienists.

- Occupational health nurses are represented by the Korean Association of Occupational Health Nurses.
What legislation does Korea have that impacts on the provision of occupational health?

- The **Industrial Safety and Health Act** was separated from the **Labour Standards Act** in 1981 to secure the safety and health of workers and to improve working conditions and work environments.

- The law was sweepingly **revised in 1990** and has been amended several times since then to expand workers’ rights to know and to participate.

- The **Ministry of Employment and Labor** of the central government takes overall charge of workers’ safety and health, and **regional labor offices** are responsible for enforcing compliance with the legislation.
What about research and education?

- The Korea Occupational Safety and Health Agency (KOSHA), a government-sponsored agency established in 1987, provides major education programs and conducts research on occupational health.

- Schools of Public Health have occupational health education programs for postgraduate students.

- Occupational medicine specialist certification programs require 4 years of resident training in designated training hospitals.
What has Korea contributed to the advancement of the specialty?

- Korea has but a brief history of occupational health as a science and practice.
  - However, in 1996, Korean researchers achieved a world first when they reported a novel reproductive disorder caused by a new solvent, 2-bromopropane.

- Korean researchers have recently led manganese neurotoxicity-related research in welders. Furthermore, Korea has developed a unique occupational health service model to cope with various occupational health issues arising in the process of rapid industrialization over a very short period.
1966  Opened Sun Orthopedic Hospital
1986  Opened Medical Screening Center
1997  Opened Sun Dental Hospital  (Certified by JCI in 2012)
2009  Opened Center of Occupational and Environmental Medicine
2012  Opened New International Medical Screening Center  (Certified by JCI in 2013)
2011, 2013  The Leading Foreign Patients Hospital selected
2012, 2013, 2014  Grand Prize of Medical Korea Award

1925~2004 Dr. Ho-Young Sun, Orthopedic Surgeon
1963 Doctorial Degree in Heidelberg Univ.
1966 Founded Sun Medical Center

Chairman
Dr. D.H, Sun
Joint Hip Specialist

CEO
Dr. S.H.Sun

Chief of Dental Hospital
Dr. K.H.Sun,
Implantologist
CURRENT STATUS

Daejeon Sun General Hospital

Yuseong Sun General Hospital

Sun Healthcare International

Sun Dental Hospital

Onlinemed

Corentec
CURRENT STATUS

Tertiary & Teaching Hospital
800 Beds / 3,000 Out Patients
11 Centers / 39 Departments
Differentiation of Sun Medical Center

_Specially designed health screening bus_
Differentiation of Sun Medical Center

_Specially designed health screening center at workplace_
Differentiation of Sun Medical Center
_Specially designed health screening center at workplace

Health promotion sessions for workers of each workplace
Spine & Joint Center

Spine Center  Spine Operation 12,010 cases
Collaborated Treatment by Spinal Specialists of Neurosurgeon, Orthopedic Surgeon and Rehabilitation.

Joint Center  Joint Operation 20,716 cases
Joint Subcommittee is composed of the disease by a specialist and have a lot of experience surgery
It provides the best treatment to the accumulated technology

Rehabilitation Center
New Concept of Physical Therapy Center-The place like Hotel Fitness Center where patients are able to relax and concentrate on their treatments.
Cancer Center

Integrated Diagnostics / Integrated Care System
Breast Cancer, Thyroid Cancer, Liver cancer, Lung Cancer, Women Cancer, Prostate Cancer, Stomach Cancer, Colon cancer, Bone & Soft Tissue Tumors.
*(designated Class 1 Hospital of 2012 by the Korea Ministry of Health and Welfare)*

Specific Metastasis Cancer Center
Abdominal Metastatic Cancer / Liver & Lung Metastatic Cancer / Spine & Bone Metastatic Cancer Clinic

Rapid Arc
- **SRS**  Radiation 3mm Beam surgery
- **4DRT** Precise Aiming and Irradiating Accurately to the Tumor by Gating the Areas of Tumor that Moves Hen the Patient Breath at the Time of Treatment of Lung and Abdominal Cancer
- **IMRT** Using a Dynamic Multilevel Collimator, Variable Dose Rate, and Variable Gantry Speed to Generate IMRT-Quality Dose
- **VMAT** Delivering Continuously Modulated Dose to the Tumor while Sparing Normal, Healthy Tissue
**Gynecologic Cancer Center**

Obstetrics and gynecology specialist/MD

Laparoscopic uterine authority

Former Director of Uterine Cancer Center of Korea Cancer Center Hospital

**Dr. S.C Choi**

Uterine cancer, ovarian cancer, uterine fibroids can be treat by simple laparoscopic surgery

Trained ‘LEER Surgery from professor Hockel in Leipzig University in 2004

*LEER Surgery: Laterally extended endopelvic resection
SUN DENTAL HOSPITAL

Accredited by JCI (2012. 04.25)

CAD/CAM Digitalized Hospital (Reduction of Visit)

120 Unit-Chairs, Treat 500 Dental Patients per Day

50 Medical Staffs & 130 Hygienists

Sub-specialized Department System

Orthognathic Surgery / Implant / Orthodontics / Prosthesis / Mandibular Joint Center / Periodontics / Scaling Center
The Largest Health Screening Center in the World

HDR Architecture, USA (Architecture Firm Specialized in Hospital Design)
SIZE: 12,561 m²
Certified by Joint Commission International

March 2013

The First Health Screening Center accredited JCI Certification in the World

Received Excellent in 1,200 Categories
(Patient Safety, Infection Control, Service Quality Management etc.)

Operate Patient Safety Monitoring System
Advanced Medical Equipment

Automated Breast Ultra-Sound Scanner ABVS
- Realization of the Ultra-Sound Image of Breasts in 3-D & Diagnosis the Entire Breast at Once

Echocardiography iE33, Philips
- Diagnosis of Pericardium, Malformation, Cardiovascular Stenosis, etc

Electron-endoscope Olympus
- Minimizes the Pain Experienced by using the Thinnest Fiber

PET-CT mCT20, Siemens of Germany
- Acquires Accurate Images by Maximal adhering to the Patient
- Diagnoses Early Stage of Systemic Cancer

256CH DUAL SOURCE CT, Siemens
- Shortening Examination Time (Takes 192 Images in 0.33 Seconds and Images the Entire Body within 20 Seconds)

MAGNETOM Avanto, Siemens
- Reducing Examination Time by 1/2 with High Resolution Images
Medical Check-up System
Focused on Examinee’s convenience

Architectural Design for Integrated observation of examinees’ circulation
RFID/Kiosk – Automatic Information System
Quick & Easy Application System

Questionnaires
Start Page
Result
Various Medical Check-up Programs

Specialized Program
Cerebrovascular/Cardiovascular/Digestive/5 Major Cancer/Honeymoon/Pre-Mother/Female Cancer

Prestige Program (Early Result Report)
2 days & 1 night

Anti-Aging

Cancer Genetic Test
Hotel-like Services & Facilities

- Private 5-Star Hotel-like Room in Hospital
- Comfortable Medical Examination by Allocating 1:1 Full-Time Nurses
- RFID System (Galaxy Note & 5 Language)
Special Services for Foreign Customer Service

Provide Butler and Concierge Service

Foreign Medical Staffs are Available
(English, Chinese, Russian, Mongolia, etc.)

Airport Pick-up & Sending Service
(2 hours from Inchon Airport)
Provide Various International meals and have many experience that hosted international food fair.
The United States, China, Russia, Mongolia, Arab countries, etc.

Menu for Foreign Customers
GROUP MEDICAL TOUR

Group Medical Screening of HYUNDAI & KIA MOTORS Co. and their Customers (Domestic & Overseas)
(Affiliated with Sun Medical Center)

Tour at Jeju Haevichi Resort (by Hyundai Motors Co.’s Subsidiary)
Be loved Health Screening Center from all over the world

Dr. Yoon Bang Boo
President of Sun Medical Foundation
Number of Foreign Patients

- **2010**: 94
- **2011**: 502
- **2012**: 1490
- **2013**: 1716
- **2014**: 2549

- **First Half**
- **Second Half**
Training Programs

Training Programs for Foreign Doctors

- **Korea-Mongolia Project:**
  Mongolian medical education
  (2012. 07 ~ 2017. 12)

- **Short-term Medical training**
  India Apollo Hospital
  Thailand Bangkok Hospital
  China Beijing Sino-Japanese Friendship Hospital
Global Project  _ Belarus

Gazprom Medical Center (Business Plan, Architectural Design) Project
Global Project __ Algeria

Construction & Operation of National University Hospital Projects (500 beds size)
Reputation of Sun Medical Center
VISIT AND BENCHMARKING

The First lady of Mongolia

Ghana & Congo Ambassador to Korea

Kazakhstan Ambassador to Korea

National Assembly of Sweden

Vietnam National Hospital

India Apollo Hospital
VISIT AND BENCHMARKING

Samsung Medical Center
Joongang Univ. Hospital
Korea National Tourist Organization

Yonsei Univ. Hospital
Myongji Univ. Hospital
Seoul National Univ. Hospital
Thank you!