

# 論 文 内 容 要 旨

The pilot study for health check-ups system at  
elementary school in Cambodia

(カンボジア王国における小学生を対象とする健康診断シス  
テム構築に関するパイロット調査)

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## SUMMARY

### **[Introduction and Aims]**

The school health check-ups was introduced under the frameworks for Health Promotion in School (HPS) by World Health Organization in 1995. Establishment of health check-ups system at elementary schools could contribute not only for the health and welfare of children but also accumulating national health basic data in ordinary time. In Japan, primary school health examination has been introduced since the Meiji era, and their basic data functions as a basis for evaluating health problems caused by atomic bomb damage in Hiroshima and Nagasaki and nuclear damage in Fukushima. In Cambodia as well, based on the fact that nuclear power plants will be introduced in the future, building such a medical examination system will be an important foundation for knowing the health hazards in emergency such as radiation disasters and warfare. However, in Cambodia, a national health check-ups system has not been established yet to schoolchildren and general population. This is the pilot study on school health check-ups in cooperation with the government of Cambodia aimed to promote health check-ups system in Cambodia.

### **[Materials & Methods]**

This study was conducted at Teacher Training elementary school in Siem Reap province, Cambodia in June 2016 and August 2017. The subjects were all students at graders 3 and 4 (academic year 2016), 3 and 6 (academic year 2017) at the elementary school. Totally, 349 students were asked to participate in this study and 294 of them agreed after written consent of parents. Except for 2 students whose data were missed, totally 292 students, 135 in 2016 and 157 in the 2017, were analyzed.

This study contains questionnaires, physical examination for ENT, lung and heart as well as urinalysis, using Japanese school health check-ups model. We used the WHO guideline of growth reference, in which the growth chart was classified by Standard Deviation (SD) of BMI value. The reference value of SD is set different depending on month old and is classified as Overweight:  $>+1SD$ , Obesity:  $>+2SD$ , Thinness:  $<-2SD$ , and Severe thinness:  $<-3SD$ . The questionnaire included major 16 items such as current and past health status, subjective symptoms, vaccination history, which was answered by parents. We diagnosed the results based on the evaluation criteria which was set by using the result of the questionnaire and/or physical examinations. For the students suspected of unhealthy, face-to-face interview was conducted in 2016, but in 2017, a recommendation letter was given without interviews. This study was approved by the Ethics Committee in Ministry of Health, Cambodia (0085 NECHR) and Hiroshima University, Japan (E-224-1).

### **[Results]**

Totally 292 students (mean age:  $9.8 \pm 1.7$  years, 54.5% boys and 45.5% girls) were eligible for data analysis. The overweight and underweight prevalence was 15.1% and 8.6%, respectively. In the results of the questionnaire, dental caries(62.3%), weight stunt(24.7%), history of sudden tachycardia(6.2%), history of arrhythmia(2.1%), syncope during exercise (1.0%), chest pain during exercise(4.5%), dyspnea on exertion(14.0%) and dyspnea during walking(8.6%) were observed. The vaccination coverage was 50.0%(Diphtheria), 47.3% (Pertussis), 60.6%(Tetanus), 62.0%(BCG), 41.8%(Hepatitis B), 66.4%(Polio) and 79.8% (Measles). In physical examination, 20(6.9%) students were suspected of otitis media by otoscopy but none of them had hearing deficits. Two(0.7%) students had hypertrophy tonsillar grading 3 and 2(0.7%) students had rale. Urinalysis results showed that 7(2.4%) students had proteinuria 1+ and 1(0.3%) student had hematuria 2+ with proteinuria 1+.

Based on the evaluation criteria of this study, 38(13.0%) students(10 in 2016 and 28 in 2017) were suspected of having health problem. In 2016, among the 10 students, 7 of their parents were answered that their children had cardiopulmonary symptoms, but we did not find abnormality in physical examination and after interview we diagnosed four of them as healthy. We also diagnosed as healthy for one student with tonsillar hypertrophy after interview. However, one with rale was advised to continue follow-up at hospital and another was recommended for further examination at hospital because of abnormal urinalysis.

In 2017, 28(9.6%) students were diagnosed as unhealthy. Among them, 27(9.2%) had cardiopulmonary symptoms without any physical findings. Another one had rale with high fever. All the 28 students received a recommendation letter for further check at hospital.

Considering the results of the interview in 2016, totally 88.7%(259/292) students were diagnosed as healthy in this study.

## **[Discussion]**

In this study we revealed that 88.7% of the schoolchildren diagnosed as healthy. This result could be one of basis data for the current health condition of children in ordinary time of Cambodia. On the other hand, we found students with health problem, such as cardiopulmonary subjective symptoms, abnormal urinalysis, rale sound and recommended them for further check at a hospital. These results suggest that the health check-ups was performed effectively as a 1<sup>st</sup> screening.

Contrary to previous reports, the prevalence of overweight(15.1%) was more than underweight(8.6%) in this study. This results suggested that possibility of change of nutritional status, life-style in home, the activity of school time or other factors among elementary school children in Cambodia, but selection bias should be considered because this study conducted only in a public school in urban area. To promote physical activity and healthy eating in order to prevent obesity or lifestyle-related diseases will become necessary to the future children in Cambodia.

The parents-report vaccination coverage was as low as 41.8% for hepatitis B virus (HBV), although Cambodia is highly endemic area for HBV infection with high hepatocellular carcinoma mortality rate. Elementary school is supposed to be the most optimal institution to grasp the health condition of the whole pediatric population where assessment for the vaccination can be done. From this assessment on HBsAb, it will be useful for catch-up vaccination of HBV to school children with lack of antibody.

**[Conclusion]**

In this pilot study, we showed the prevalence of healthy among schoolchildren of Cambodia and detected the students with possibility of health problem through this screening and recommended for visit hospital. Base on the results, we assume that health check-ups system in elementary school in nationwide will be effective in assessing the current health status in ordinary time and possibility of early detection of disease.