‘A vaccine for the nation’: South Korea’s development of a hepatitis B vaccine and national prevention strategy focused on newborns

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Introduction

When the scale of hepatitis B infection in South Korea came to light in the 1970s, the emerging public debate on the disease centred on the method of transmission. South Korean medical doctors focused on blocking the transmission routes and on campaigning for a hygienic lifestyle. In the end, public fear and arguments about hepatitis B meant the authorities had to produce a national prevention strategy. This national strategy proceeded in three phases that were closely related to the political developments and changes Korea was facing as a nation. First, a campaign against hepatitis B virus (HBV) transmission was initiated as a way to save the nation from the dishonour of being an under-developed country. Second, a domestic HBV vaccine was developed to forge a more independent path for modernisation, although with international assistance. Third, the first national prevention strategy using the vaccine was implemented. Later, in 1985, the vaccination programme was modified to focus on the vaccination of newborn babies, the future of the nation.

This chapter follows the construction of the national hepatitis B vaccination plan in the 1980s. For the implementation of this vaccination plan, the Korean government had to try not only to develop a less costly vaccine but also to justify its plan to the public and to overcome disagreements in the medical community. The first of these challenges was closely connected to international vaccine strategy, while the second

one also drew on resources from outside Korea. This chapter shows how the idea of 'building the future health of the nation', even if it was actually an idea originated outside Korea, has exercised a major influence on the country's vaccination strategy. Moreover, throughout the implementation of the vaccination plan, as we will see, it was hardly a univocal one: there was deep confusion and disagreement among doctors, vaccine manufacturers, the mass media and the authorities. Yet, it should be noted that the final outcome was not entirely random; not so surprisingly, the national strategy pretty much coincided with a reflection of the nation's future-oriented, developmentalist imaginaries.

The 1950s: Korea becomes a favoured place to conduct hepatitis research

The symptoms of hepatitis, and its effects on the liver, have been known since ancient times. However, in the late nineteenth century, the possibility that this may not be a single disease began to be raised. In fact, most of the earlier descriptions were of what is now known as hepatitis A, or 'infectious hepatitis'.¹ By the 1940s, 'serum hepatitis' or hepatitis B began to be identified as a distinctive disease. It was later discovered that these two different types of hepatitis are actually caused by separate viruses. Infection by the hepatitis B virus might rapidly lead a person towards death, but it is also possible that the infected person would first develop cirrhosis or cancer of the liver. In the aftermath of the Second World War viral hepatitis attracted increasing research attention. An extensive hepatitis epidemic, which was noticed by US Army health officers, occurred among American troops stationed in Germany, but the transmission route of viral hepatitis was highly uncertain. It was not only in Germany that viral hepatitis was then found to be prevalent, however. It was found also to occur in China, the South Pacific region and around the Mediterranean. The high prevalence rate of hepatitis among American soldiers stationed abroad was understood as being mostly related to frequent contact with local civilians and the hepatitis epidemic among soldiers was regarded as reflecting local civilian hepatitis rates.²

The Korean War (1950–53) provided an opportunity for a large-scale survey of viral hepatitis. The US Army built a 'Hepatitis Center'

at its military hospital in Kyoto (Japan), where it intensively treated and researched hepatitis among the US troops in East Asia. Nearly 1,000 US soldiers suffering from acute hepatitis received medical care in the centre. In addition, by the spring of 1951, a 'hepatitis team' had been organised by the army, established to study cases of viral hepatitis among military personnel. The accelerated epidemic, which reached 34,000 cases during the Korean War, led to this extensive hepatitis research by the US Army.³

This quote from Dr M. E. Conrad, Director of the Walter Reed Army Research Institute in Washington, DC, illustrates how Korea was seen as a vantage point for the US research on hepatitis.

Korea was selected for the performance of this study because it is an Asian country where 50,000 US soldiers are assigned yearly for a 13-month tour of military duty, all soldiers arrive in Korea through a single airport, all patients with hepatitis are hospitalized at one of two military hospitals, peacetime operations provide a greater chance of success and the incidence of hepatitis was sufficient to permit performance of the study within two or three years.⁴

The Korean medical elites were extremely cooperative towards US health officers, and, due to the Korean conscription system, large numbers of Korean males were available as research subjects. The US Army, in particular the 406th Medical General Laboratory, together with Korean doctors, carried out a large-scale Serum glutamic pyruvic transaminase test, a test which in the clinic is used to diagnose hepatocellular injury. Here 1,906 recruits at a training centre in Korea were tested. The thirty-two cases with abnormal results were taken to an army hospital and liver biopsies were performed on them. The hepatitis researches in the 1950s mostly focused on *anicteric hepatitis*, a relatively chronic form of hepatitis, seldom visibly showing the signs of jaundice.

In 1964, a US military programme was established to protect all military personnel stationed in Asia against hepatitis for the first time.⁵⁶ Under this programme all American military personnel in Asia were administered gamma globulin made from human plasma, which had been found to confer a degree of protection. The programme was based upon the results of hepatitis research in Korea. It confirmed ongoing research in Korea that gamma globulin could lower the hepatitis rate in an area where viral hepatitis was endemic.⁷

In 1964 Dr Baruch Blumberg, an American geneticist, found a strange protein in the blood of an Australian aborigine while analysing blood samples from around the world. This substance, which became known as the Australia antigen, proved to be a protein from the hepatitis B virus. This discovery made research into viral hepatitis much easier, since a simple blood test could now be used in place of an invasive liver biopsy. By using the blood of an asymptomatic layperson, serological diagnosis and epidemiological studies of hepatitis also became possible. With aid of the serological advance, prominent hepatitis researcher Dr Chung Young Kim could study epidemiology in Korea, where viral hepatitis was endemic. Although the validity of Dr Kim and other physicians' research could not be fully established at this point, the medical doctors started gaining the status of experts leading the nation's way into 'modernity'.

Although viral hepatitis was endemic in Korea, the term hepatitis was not widely known to the public and, in this sense, it was not a well-recognised disease among the general population. Therefore, Korean medical elite carried out various studies with an intention of raising awareness about hepatitis. Dr Chung Young Kim was a key figure in Korean hepatitis research at this time.

After finishing a residential course in internal medicine in 1964, he had trained as a research fellow at Harvard University Medical School and Boston City Hospital. He had researched the connection between the Australia antigen and viral hepatitis with the aid of grants from the National Institutes of Health, the Office of the Surgeon General, and the US Department of the Army.⁸ After returning to Korea, he continued this work, in 1971 reaching the conclusion that 9 per cent of the blood in Korean blood banks was contaminated by the hepatitis virus.⁹

However, at the time this assertion did not attract much attention. The mass media in Korea paid more attention to his later work on the serum-hepatitis virus and on antibodies. In 1977, he developed a hepatitis B vaccine, which became known as 'Kim's vaccine', using serum from the blood of HBV-infected patients. Although he made use of clinical data, his research contained no data from experiments on primates.

Two years later, the hepatitis rate in Korea became a prominent issue. In 1979, Dr Kim and Dr Hong, his pupil, researched sero-epidemiological patterns of hepatitis B in Korea.¹⁰ There had been some previous sero-epidemiological research into hepatitis B in Korea, but it had been

limited to very specific populations, such as primary liver cancer patients (1972),¹¹ health care workers (1975),¹² and prostitutes (1979).¹³ In addition, one researcher other than Kim had already demonstrated the prevalence rate of the hepatitis B antigen among the patients in a hospital in 1977. But unlike these earlier studies, the media expressed intensive interests in Kim's findings of '66% of Koreans being hepatitis B patients' and framed it as 'a dishonor of being an underdeveloped country with high rates of an epidemic disease'. In this way, hepatitis B turned into a test bed judging the extent of the nation's development.

Dr Kim's epidemiological results also came later than those from other Asian countries, including Singapore (1972)¹⁴ and Thailand (1973).¹⁵ Nor did he present data on the actual occurrence rate of hepatitis B revealed by follow-up research, limiting himself only to the prevalence of the hepatitis B antigen in blood samples. Nonetheless, his results showed that 66.3 per cent of patients had anti-HBc, which indicated previous infection. Dr Kim and Dr Hong publicly announced that '66% of Koreans have hepatitis B virus'. The mass media in Korea were shocked by this announcement.¹⁶

The 1970s: controversy over the transmission route emerges

In 1975 studies of 1,000 birth mothers in Taiwan showed that hepatitis B virus could be transmitted by the maternal-fetal route.¹⁷ This work suggested that the maternal transmission of the hepatitis virus could be more prevalent in a hepatitis-endemic area than the transmission through sexual contacts or through the use of a contaminated needle. However, maternal transmission had not been proven in Korea and doctors were unwilling to assume that results from Taiwan could be extrapolated to South Korea. The first study of vertical transmission in Korea concluded that, 'Vertical transmission of HBsAg seems to be unimportant to the high prevalence of hepatitis in Korea.'¹⁸ HBsAg, or the surface antigen of HBV, which can indicate current hepatitis B infection, was more prevalent in children than in infants in South Korea, which indicated that transmission of the hepatitis virus mostly occurred through daily social interactions within the family rather than at birth.

Dr Kim's study indicated not only the high prevalence of HBV but also the role of intrafamilial transmission. The sero-epidemiological study by Kim and Hong showed that the HBV prevalence rate was

highest in the first year of life (which could be due either to intrafamilial transmission or to maternal-fetus transmission) but that there was also an increase in the prevalence rate after eight years. This might be due to the children's admission to elementary school. Scientists thought that the results pointed to the likelihood of transmission through everyday social life in the family or at school.¹⁹

Not all Korean doctors were convinced, though. Some did not even believe that maternal-fetus transmission and intrafamilial transmission were the main transmission routes, and there was substantial support for this view. For example, Dr I. M. Kim showed that there were many opportunities for infection outside the family.²⁰ Dr J. M. Lee found that only 30 per cent of newborns from HBsAg-positive mothers became HBV-positive, which did not correspond with the maternal-fetal transmission theory.²¹ Dr J. H. Park also reported negative evidence for the maternal-fetal transmission theory and suggested the possibility of transmission in other ways, such as acupuncture.²² For most scientists in Korea, the main cause of the hepatitis B epidemic needed further investigation, and daily life of cherishing 'pre-modern' collectivity more than 'modern' individuality in Korea seemed more suspect than the family. Although the theory of maternal-fetal transmission as the main cause of HBV transmission in endemic areas was widely accepted outside Korea, Korean doctors did not all agree with it. For example, Dr J. J. Koo said, 'There is a huge difference in the hepatitis carrier rate between ethnic groups and countries.'²³ With these research outcomes, the opinion of South Korean doctors was skewed toward the position that the South Korean situation could be different from the Taiwanese one.

While Korean people feared that the hepatitis virus could be transmitted at high rates through everyday activities, public panic focused particularly on transmission through indirect oral contact, especially through saliva. Most commentary in the media drew attention to the habit of sharing glasses in Korean drinking culture. Most social drinking in the workplaces or family gatherings tended to involve shared glasses, leaving individuals almost no choice. Then, after the emergence of the hepatitis B epidemic, public panic arose about the possibility of viral transmission through the sharing of glasses. Some scientists also demonstrated the risk of transmission in this way, through a simple clinical experiment featuring twenty subjects.²⁴ Since this ritual of sharing

glasses was seen as symbolic of hierarchy in every organisation, some could find an excuse to resist abandoning this 'pre-modern' custom. Although some epidemiological studies later revealed that sharing glasses was not a major transmission route in Korea, the panic and suspicion did not diminish and the popular belief of sharing glasses as a major source of transmission has not completely disappeared even today. In some way, as the ordinary people had become more conscious about the individual hygiene, they tended to find the hierarchical and collectivist culture of sharing glasses even more uncomfortable and held it responsible for the persistence of hepatitis B.

The 1980s: the campaign for a hygienic lifestyle

A year after public awareness of the hepatitis B epidemic had arisen, the Korean Medical Association (KMA) initiated its own campaign against HBV transmission, alongside that of the public health authority. The KMA decided to prioritise the anti-hepatitis campaign among its major campaigns against major diseases in South Korea and established an anti-hepatitis task force team to take charge of it.²⁵ Professor J. M. Yang, at the school of public health, stated that 'physicians have only protected their own interests with treatment and have neglected the prevention of disease through lifestyle changes'.

When he emphasised that 'today we should adopt a more hygienic lifestyle and pursue public health education and enlightenment', it was to underscore the importance of lifestyle changes rather than the necessity of introducing vaccines and treatment. The KMA was the first to adopt and espouse the idea of the campaign and pursue it, which embarrassed the public health authority.²⁶ Japan also conducted a similar campaign during 1980s.²⁷

The main goal of the KMA campaign was to promote a hygienic lifestyle and public awareness. The campaign mainly targeted behaviour such as hand washing and the use of disposable syringes. Dr Kim emphasised that hand washing was of the utmost importance in blocking transmission. The KMA also tried to ensure that physicians' material interests were protected in the campaign. For example, it sought to guarantee that doctors would be reimbursed for the costs of using disposable syringes. Moreover, it tried to shift blame from the medical practices at their own clinics to the 'unhygienic' ones at barbershops, acupuncture clinics or dental clinics.²⁸

While the campaign underlined the high rates of hepatitis B among adults, it paid less attention to vertical transmission. However, some public health officials, such as Mr S. W. Shin, doubted the value of the campaign, arguing that 'the campaign is focusing upon washing hands, and not sharing glasses ... There was no campaign about vertical transmission.'²⁹ On the other hand, Dr J. D. Lew, who headed the anti-hepatitis task force of the KMA, responded by stating, 'I did not know that vertical transmission was that much important.'³⁰ The physicians in the KMA neglected maternal-fetal transmission at first.

Initially, the government limited its intervention only to supporting the KMA campaign. However, soon after, in preparation for the 1988 Olympic Games, which would bring thousands of visitors to Seoul, the government decided to establish a comprehensive anti-hepatitis policy focusing on hygiene issues. Major actions taken by the government included the mandatory use of disposable syringes, sterilisation of medical instruments and public campaign to raise awareness about the importance of maintaining the hygiene of razors and dishes. The introduction of a hepatitis vaccine and the proclamation of hepatitis as a legally designated infectious disease were also discussed, though inconclusively.³¹ The campaign by the government and the KMA was criticised for the lack of supporting evidence, such as epidemiological data. Later, some epidemiological results even contradicted the premises of the campaign.³² Some epidemiologists openly denounced the assumption that an HBV-antigen-positive rate was indicative of the prevalence of the disease, which underlay the government and the KMA's measures. Instead, these epidemiologists insisted on the necessity of researching infection history; otherwise, the size of the epidemic would be overestimated. Nonetheless, the lifestyle-focused campaign prevailed until the full-scale vaccination campaign was introduced. From this point, the focus shifted from overcoming backwardness to becoming an advanced country.

Developing inexpensive vaccine: influences from international agencies

The hepatitis-prevention policy in Korea had originally emphasised behavioural change; however, the policy began to change, albeit slowly, with the possibility of developing a vaccine and in response to pressure

from the World Health Organization (WHO) and overseas specialists. It is notable that, for various reasons, the health professionals in international agencies identified South Korea as a suitable country to produce inexpensive vaccine products.

At this point, most vaccine products including hepatitis B vaccine in South Korea had been imported. As of 1983, two Korean pharmaceutical companies, Joong Wae Pharmaceutical and Dong-A Pharmaceutical, were in charge of importing foreign vaccines. Yet, the cost of vaccination was around \$140 per person, which made it virtually unavailable for the large proportion of the public.³³ The sheer estimated cost of imported vaccines deterred the Korean government from purchasing the products at their current price as well as from implementing the vaccination programme for the public.

Under these circumstances, some medical professionals in Korea began to turn their attention to developing vaccines using the 'Korean' technology, which would also provide an opportunity to demonstrate their expertise. The Korean Green Cross, whose specialty was a blood fractionation technology, started developing a vaccine (later named Hepabox) with the aid of Dr Jong Young Kim. A primate experiment was said to be the chief obstacle to developing a vaccine by Green Cross, because it was not possible in Korea.³⁴ For this reason, Green Cross contracted an American company and the Kitasato Institute of Japan to conduct tests. Finally, in 1983, after studies in the USA were completed, Hepabox received approval for sale.³⁵

Meanwhile, foreign hepatitis experts started developing interests in finding a company that could produce a vaccine on a large scale on their behalf. A company based in South Korea would be a suitable candidate for their purposes because the country had a high rate of hepatitis and a large number of subjects as well as several vaccine companies, such as Green cross, Cheil Sugar and LG Industry, competing for sales. In the early 1980s Dr Alfred Prince of the New York Blood Center, who was famous for having discovered the importance of HBsAg, worked with Cheil Sugar to develop vaccines using his own technology, a heat-process method.³⁶ Having a humanitarian interest in supplying a low-priced vaccine to the Third World, he developed the Cheil vaccine, which was evaluated in 1985 by the Catholic University in Korea, a WHO-authorised research centre.³⁷ It could be made in a highly pure form and in high volume in compliance with WHO standards.³⁸

At the early stage of development, the Korean government guaranteed the profitability of the domestic hepatitis vaccine technology to the companies. When Green Cross developed Hepabox, the government ordered the protection of its copyright for five years under the New Medicine Protection Rule. In addition, the government approved the Cheil vaccine for export.³⁹ An official of the Ministry of Health said, 'It is helpful to public health for a big company such as Cheil Sugar (with Samsung) to produce vaccines at low cost.' The Cheil vaccine was principally intended for foreign markets, such as those of Southeast Asia, rather than the domestic market. The mass export of the Cheil vaccine met the WHO's need for a cheap hepatitis vaccine across Asia. After Cheil Sugar began to market HepaxinB in Southeast Asia, Green Cross began to sell Hepabox in Indonesia.⁴⁰ Following Cheil's success in developing a second-generation vaccine, the price of the vaccine fell sharply.

Despite intense competition among Korean vaccine companies, they shared a common interest in mass sales and vaccination. They sought ways to sell their vaccines on the global markets as well as on the domestic one. At first they thought that, rather than vaccinating several high-risk groups of adults, vaccinating all newborns could be a much more efficient approach. They constantly held lectures and symposia, and invited foreign scholars to promote a newborn-vaccination policy.⁴¹

Their interest coincided with the WHO's strategy of a newborn-vaccination policy in order to control more effectively; the Organization had emphasised the need to vaccinate newborns from the early stages of the campaign. Since 1983 WHO had focused on hepatitis prevention, with later studies showing the relationship between hepatitis B and primary liver cancer.

The WHO's hepatitis-prevention strategy recommended vaccination of all newborns in high endemic areas and vaccination of high-risk groups in low endemic areas.⁴² The WHO regarded the HBV as a 'carcinogen next to smoking'.⁴³ In the view of the WHO, the Asia-Pacific region, including Korea, was a strategically important one among WHO regions for its goal to develop a vaccine and a prevention strategy. The programme in the Asia-Pacific region proposed to dramatically control the disease both by lowering the cost of vaccine by mass production and by vaccinating all newborns.⁴⁴ Korea had been a key country in the WHO's strategy, and could hardly be left out.

Modifying the path and targeting the 'Future Generation'

After the development of a domestic vaccine, the Korean government quickly implemented a national hepatitis B prevention strategy in late 1983.⁴⁵ The plan was accelerated by the forthcoming Olympic Games, which made the Korean government eager to decrease the hepatitis rate. It was a five-year plan with its main goal of vaccinating 40 per cent of the entire Korean population. Groups frequently interacting with the public, such as officials and teachers, were to be targeted first, with a low-cost vaccine. Prostitutes, industrial employees and infants below the age of 6 were to be the next target group. The free vaccination of newborns from HBV-positive parents was to be achieved after 1985. In addition, every official institution was to conduct a hepatitis test on new staff prior to employment. The programme was clearly intended to decrease the prevalence rate quickly, mainly targeting adults who worked with the public.

As soon as this policy was implemented, it attracted harsh criticism, both from Korean scientists abroad and from the WHO. WHO specialist Dr J. E. Maynard, who visited Korea in 1985, pointed out that the WHO's hepatitis policy was about public promotion, mass vaccination, hepatitis tests upon birth mothers, and mandatory newborn vaccination. He reminded his audience that Korea was among those countries with a large number of carriers, which the WHO recommended should vaccinate all newborns. He dismissed concerns that had arisen in Korea about the dangers of the vaccine, saying that, 'The hepatitis vaccine is generally perfectly safe.'⁴⁶ He also urged the Korean government to withdraw its protection of the Green Cross vaccine patent in favour of the Cheil vaccine.⁴⁷

The pressure from the WHO not only induced the mass production of the vaccine in Korea but also led to a change in hepatitis policy. Reversing the approach adopted by Korean doctors until that point, the decision was taken to vaccinate all newborns. Most Korean doctors had preferred behavioural control and adult-inclusive vaccination at individual clinics after a serological test, and they distrusted mass vaccination without prior testing. Some physicians were annoyed when nurses inoculated students with the hepatitis vaccine in schools, following the introduction of mass vaccination in schools by Seoul's education council. The doctors insisted that 'Mass vaccination should be avoided

because hepatitis vaccination needs an immunisation test and medical examination.⁴⁸ They objected to mass vaccination because it meant unskilled personnel would administer the vaccine. Korean doctors continued to distrust mass vaccination thereafter; on one occasion, they reported a nursing school hospital to the KMA ethics committee for vaccinating at a reduced price.⁴⁹

Korean doctors overseas also criticised the South Korean government's hepatitis-prevention policy. They insisted that universal newborn vaccination was the most effective approach for future generations and condemned the adult vaccination policy as a waste of money. Dr Jae-Ha Kim, the head of the committee of Korean scientists resident in Japan, was a key opponent of the national policy. In his article 'Modifying the Path', published in 1985, he asserted that: 'The program neglects infants below the age of three and promotes unnecessary mass vaccination upon adults.' He also said, 'Prevention of transmission from the carrier population should be altered by the non-creation of a carrier population.'⁵⁰ He submitted his opinion letter to the government in late 1984.

In a 1985 paper, Dr J. H. Kim showed the importance of changing the target of the policy (see figure 4.1). If hepatitis B patients are assigned to group A, hepatitis carriers to group B, and non-infected people to group C, the government's five-year plan would only benefit the people in group C and would have no effect on group A. He argued that the non-creation of antibody among new members in groups A and B was critical, and that this could best be done by targeting the vertical transmission responsible for 30 per cent of the transmission route. In his theory, horizontal transmission, which accounted for 70 per cent of transmission, could be reduced by an increased level of education and hygiene habits. For the future health of Korea, rather than focusing on the health of group C (the non-infected), it was important that in the next generation there should be no new members of groups A and B. In his account, only the problem of vertical (maternal-fetal) transmission would remain, and targeting vertical transmission would be the only efficient way of reducing the HBV-positive population.

Dr J. H. Kim's argument gained attention before the causes of hepatitis B transmission in Korea had been clearly ascertained. He believed that even if vertical transmission was not the chief cause in Korea, newborn vaccination was the most effective way of improving the

Figure 4.1 The graph in Kim (1985), showing the importance of changing the target population.

health of the country, saying, 'In adulthood, viral infection will just be transient, whereas in childhood it produces permanent carriers.'⁵¹

Dr J. H. Kim offered a similar view to the KMA's newspaper in 1985. According to him, current policy would require additional purchase of foreign vaccines, which would cost an extra trillion won (\$100 million). Consequently, the vaccination of infants below the age of 3 was more practical and efficient.⁵² Dr Whan Gook Chung disputed his opinion, pointing out that adults are infected with hepatitis, too, and that testing all birth mothers for HBeAg, the extracellular form of HBcAg, would be too expensive. He also criticised the vaccine industry for its greed.

Dr W. G. Chung's objections exemplified the attitude of Korean physicians to vaccination. They were wary of vaccinating all newborns without prior testing. In their view, it was better to vaccinate high-risk adult groups first and only then to extend the vaccination programme. Physicians accused the government and mothers mainly for ignoring hepatitis testing during pregnancy.⁵³ They expressed distrust of the

vaccination-centred hepatitis-prevention programme, disagreeing with the vaccine industry.⁵⁴

In December 1985 the KMA decided to recommend newborn vaccination, thus accepting the opinions of the WHO and foreign scientists. They formally agreed that total newborn vaccination was a more safe and effective approach for the future. However, along with this decision, they decided to re-evaluate the anti-body formation rate of the newborn vaccination before further promoting it.⁵⁵ In fact, total newborn vaccination was achieved only slowly: the recommended infant vaccination guidelines from the Korean paediatrics society first included HBV vaccination in 1991, and the government only made it mandatory in 1994.

Gradually, hepatitis B ceased to be regarded as an 'adult disease'. Public opinion also changed in that infant care came to be regarded as having been a significant factor in the hepatitis B epidemic, and hepatitis B infection as mainly due to mothers. Placing the responsibility for transmitting hepatitis B on the back of mothers had many advantages for the medical community and policy makers. Firstly, it seemed easier to isolate the target group. Also, mothers were a very compliant group, ready to do anything for the sake of their babies. Most of all, the prevention campaign gained a momentum as now it was framed as a scheme to save the nation's future. From this point, Korean society became silent about the risk of transmission among adults. Newborn vaccinations in paediatric clinics and health centres proceeded quietly. Meanwhile, public concerns have surfaced that the HBV vaccine is not effective enough to provide protection over a sufficiently long period, and that revaccination would be required. Some Korean epidemiologists are also concerned about the decline of immunity with time, the absence of a prevention programme, and the lack of a re-vaccination programme in schools.⁵⁶

Conclusion

After the Korean War, Korea was classified as a hepatitis-endemic area. Because of the war, it became a favourable location to research hepatitis B, which was an important research subject at that time. The US Army and Korean medical elite jointly researched viral hepatitis in Korea, producing the latest information about hepatitis for the army and

providing Korean doctors with appropriate hepatitis-related research skills. However, for a long time, this active hepatitis research environment paid attention to the occurrence of hepatitis in clinical settings but not so much to hepatitis epidemiology in Korea. For example, Dr C. Y. Kim, who pioneered hepatitis research in Korea, made a hepatitis B vaccine prior to understanding the epidemiology of the disease in Korea. Public attention also tended to concentrate only on the technology, and not on the epidemiological model.

However, after the public announcement of an epidemic, in the 1980s public concerns arose about the transmission of hepatitis B. In particular, the habit of sharing drinking glasses was regarded as a problem, a symbol of backwardness, and Korea's culture of collectivist eating and hierarchical social drinking was heavily criticised. Although it is hard to prove these concerns scientifically, they did not subside for a long time. Meanwhile, researchers disagreed about the principal transmission route – whether maternal, intrafamilial, or socio-cultural. Maternal-fetal transmission had been proven to be the main transmission route in other high endemic areas like Taiwan, but had not been demonstrated in Korea. Korean doctors initiated a public anti-hepatitis campaign focusing on the promotion of a hygienic lifestyle. At least at first, it was a good opportunity to establish medical practitioners' hegemony in the public health field.

Korean doctors were eager to develop a domestic anti-hepatitis vaccine using their own technology, but the development of a vaccine in Korea was subordinated to the international vaccine strategy of promoting a cheap and safe vaccine. The Green Cross, and Cheil, vaccines were developed under these conditions, ensuring competition in the market. Prominent foreign scholars connected with the WHO were deeply involved in their development.

In 1985, the Korean government initiated five-year strategy against hepatitis B, targeting the adult population in preparation for the 1988 Olympics. The goal of this approach was clearly to reduce the prevalence of hepatitis among the working population. However, harsh criticism occurred just after the implementation of the national plan, not from inside the country, but from abroad. The WHO and foreign scholars persistently emphasised newborn vaccination. In WHO's view, Korea was an outpost of a worldwide vaccination plan. Therefore, a massive newborn hepatitis vaccination plan had to be introduced and

established in Korea. On the other hand, Dr J. H. Kim, a Korean doctor residing in Japan, urged a change in strategy, arguing that total newborn vaccination would be the most efficient option for the ‘조국의 미래’ (future of Korea). His argument rested on the prioritising the future of the nation and, thus, the future generation, rather than the working population in the present. The role of the current generation was to develop economy and vaccines for the bright future of the nation.

To begin with, Korean doctors had focused on changes to what were seen as unhygienic social practices rather than vaccination. As the vaccination strategy became increasingly significant, their position conflicted with that of the vaccine industry. Whatever physicians may have thought, newborn vaccination was justified in terms of promoting the nation’s health and in the interest of future generations. In this sense, when an anti-hepatitis plan was finally introduced in South Korea, it was not just a reaction to the prevalent hepatitis B but also a reflection of the nation’s future-oriented, developmentalist imaginaries.

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