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Malaysia's Rural Health Development: Foundation of Universal Health Coverage (UHC)
(Pembangunan Kesihatan Luar Bandar Malaysia: Asas Perlindungan Kesihatan Sejagat (UHC))

JUSTEN WONG HAN WEI, NG CHIU WAN & SU TIN TIN

ABSTRACT

From 101 records relating to health kept in the National Archives of Malaysia for the period 1946–1981, 30 records were chosen using purposive criterion-based sampling on dimensions of universal health coverage (UHC) and health system governance. From those 30, document review was performed on 13 records that were selected based on relevance to analysis of the evolution of private and public health institutions and their roles in achieving UHC from 1946 to 1981. UHC relates to the ability of patients to access good quality service with high population coverage of health care at low financial risk. Malaya was a former Western Pacific nation ruled by the British colonial government. Initially, the government bore the cost of medicines and passages between the United Kingdom and Malaya for Red Cross and St. John's ambulance teams to serve in rural areas in Malaya. This was later replaced by home grown Rural Health Teams trained in purpose built Rural Health Centres beginning with the first such training school in Jitra under the Rural Health Scheme. The Rural Health Scheme was implemented from 1953 to 1956 and marked an ambitious period of utilising limited resources to expand human resource and establish District Health Centres, Sub-District Health Centres, Midwives' Houses and Maternal and Child Health Centres across the rural landscape of Malaya. After analysis, it was found that the British colonial government's efforts in improving public health through the Rural Health Scheme had provided the foundation for achieving UHC in Malaysia today.

Keywords: Malaya; rural health; universal health coverage; primary health care

ABSTRAK

Daripada 101 rekod yang berkait dengan kesihatan yang disimpan di Arkib Negara Malaysia bagi tempoh 1946–1981, 30 rekod telah dipilih menggunakan persampelan kriteria yang disengajakan berasaskan segi liputan kesihatan sejagat (UHC) dan tadbir urus sistem kesihatan. Daripada 30 rekod tersebut, ulasan dokumen telah dijalankan ke atas 13 rekod yang relevan dipilih bagi tujuan analisis evolusi institusi kesihatan awam dan swasta serta peranan mereka dalam mencapai UHC dari 1946 sehingga 1981. UHC berkait dengan keupayaan pesakit-pesakit mengakses perkhidmatan yang baik dan bermutu dengan liputan khidmat kesihatan populasi yang tinggi serta berisiko kewangan rendah. Malaya ialah sebuah negara bekas jajahan British di kawasan Pasifik Barat. Pada mulanya, kerajaan membiayai kos ubat dan pengangkutan antara United Kingdom dan Malaya bagi pasukan Palang Merah dan St. John's ambulance untuk berkhidmat di kawasan pedalaman Malaya. Perkhidmatan ini kemudiannya digantikan oleh Pasukan Kesihatan Pedalaman tempatan yang dilatih di Pusat Kesihatan Pedalaman yang pertamanya di Jitra di bawah Skim Kesihatan Pedalaman. Skim Kesihatan Pedalaman telah dilaksanakan dari tahun 1953 sehingga 1956 dan melambangkan tempoh bercita tinggi dalam menggunakan sumber terhad untuk mengembangkan sumber manusia dan membina Pusat Kesihatan Daerah, Pusat Kesihatan Daerah Kecil (Sub), Rumah Bidan and Pusat Kesihatan Ibu dan Anak di semua pelosok pedalaman Malaya. Selepas analisis, didapati bahawa usaha kerajaan jajahan British dalam menambah baik kesihatan awam melalui Skim Kesihatan Pedalaman telah menjadi asas kepada pencapaian UHC di Malaysia pada hari ini.

Kata kunci: Malaya; kesihatan luar bandar; perlindungan kesihatan sejagat, penjagaan kesihatan utama

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INTRODUCTION

Malaysia is an upper middle income country (Tangcharoensathien et al. 2011; The World Bank 2016), comprising of West Malaysia (known as Malaya before 1963) and East Malaysia (part of Borneo island), with a history of public investment in health, especially in rural areas through the Rural Health Scheme that began in 1953 (Jaafar et al. 2007a, 2007b; Mahmud 2013). In 1953, when the country was still known as Malaya, the Rural Health Scheme covered the Federated Malay States (FMS) comprising of Selangor, Perak, Pahang and Negeri Sembilan, the Un-Federated Malay States (UMS) comprising of Johor, Kedah, Kelantan, Perlis, and Terengganu, and the Straits Settlements comprising of Malacca and Penang. UHC, also known as universal coverage (UC), is defined as ensuring that all people can use the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, while also ensuring that use of these services does not expose the user to financial hardship (World Health Organization 2014). Hence, UHC is not just about universal access, but includes the four cardinal principles of equity in access, financial risk protection, coverage, and quality of care (Cylus & Papanicolas 2015). Since then, the gradual expansion and development of the public health sector in rural areas has led to improvement in equity among the rural population and geographic access. With financial risk protection and quality health services present through Malaysia's tax-funded system, Malaysia has been reported to have achieved UHC with almost 100% population coverage (Tangcharoensathien et al. 2011) since the early 1980s (Minister of Health Malaysia 2015). This was due to a change in federal government health policy in 1981, in accordance with the Fourth Malaysia Plan for 1981–1985, which shifted the focus from improving access in rural areas to improving the quality of health services through the expansion of auxiliary facilities, including inter alia, pharmaceutical laboratory and radiological support services, and also implementing an integrated approach for providing population health services through a package of health services including family planning services, family health care, nutrition, maternal and child health services (Economic Planning Unit, EPU) 1980).

UHC requires an efficient health system that provides the entire population with access to good quality health services, health workers, medicines and technologies and financial risk protection to protect people from financial hardship and impoverishment from health care costs. UHC is not something that can be achieved overnight, but all countries can take action to move more rapidly towards it, or to maintain the gains they have already made (Medicus Mundi International 2013; World Health Organization 2013).

The objective of the article is to critically analyse rural health service development in Malaya as the foundation for achieving Universal Health Coverage (UHC).

METHODOLOGY

The research method applied in this chapter is document review and analysis. Documents constitute the primary source of data and were obtained with permission from the National Archives of Malaysia (NAM), also known in Malay as Arkib Negara Malaysia (ANM). The functions of the NAM are inter alia "to collect, procure and preserve records of national and historical value; and to provide reference and research facilities to government departments and the public as well as to carry out research" (National Archives of Malaysia 2009, 2016: p.10). The NAM records are printed materials that are grouped in files and copies are kept in both the federal-level NAM and its state-level branches for reference by the public interested in conducting research on various subjects related to the history of the country, including health. The state NAM not only stores copies of provincial-level government documents, but also federal-level government documents that are not just limited to directives, but also include policy papers for the perusal of provincial researchers, making these federally relevant documents available for access even in said state NAM branches. The NAM branch in Pulau Pinang was selected because the island of Penang was the first province in Malaya to be colonised by Sir Francis Light in 1786 for the British East India Company, making it prominent as a pioneer in the provision of preventive and curative health services. Most of the documents are not stored digitally but they are indexed electronically, and comprise historically significant documents sectioned by subject matter. The NAM documents are not kept elsewhere, not even in the relevant ministries and government departments. For example, documents on health in the NAM records are not kept by the federal-level MOH or state-level State Health Department (Jabatan Kesihatan Negeri [JKN]) because they are not actively referred to on a daily basis. Of course, due to their historical significance the documents are certainly accessible to the relevant government departments on an on-demand basis.

Assistance from the Director of the Penang State NAM culminated in an extensive electronic search of NAM records on the subject of health, resulting in 101 relevant files of historically significant material being identified from 1946 to 1981, which represented the years from federal centralisation of health policy focusing on public funded services to the beginning of a national policy of privatisation, which led to rapid growth of the private health sector. Purposive sampling was then employed on the pool of 101 files based on a predetermined set of criteria, also known as "criterion-based" purposive sampling (Patton 2015). The four inclusion criteria were as follows:

1. Content on policy regarding planning improved geographical access to public health services and improved coverage as in the population density to health centre ratio in rural areas;

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2. Content on policy regarding private and public health funding and ownership of health facilities and the impact on the historical development of provider identity from informal to formal;
3. Content on policy regarding health service quality improvement through human resource planning, training and optimising allocative efficiency through building infrastructure for long-term health status gains; and
4. Content on policy regarding the laws on and regulation of private and public health institutions and individual medical practitioners.

RESULTS AND DISCUSSION

Based on the above criterion-based purposive sampling, 30 files were chosen for retrieval. Out of the said 30 files that were retrieved and read through, 13 files were deemed to be relevant to the subject under study and thus were selected as the documents for document review and analysis. The 13 files are listed in Table 1.

TABLE 1. Files selected as documents for document review and analysis from Arkib Negara Malaysia Pulau Pinang (alphabetical order by author)

No.	Author	Year	Title
1	Band, R. W. I.	1955	Health 355_55_30 : Letter further to Health 355_55_2 : Preference for "Pejabat Kesihatan Ibu2 yang mengandong dan Kanak2" with regards to the Malay version of "Maternal and Child Health Centres."
2	Brodie, W. H.	1948	Code APP 07_91 : File R 422_1948 : Penang Municipal Health Department - Report for Year 1947 : Municipal Health Officer's Report.
3	Director General Ministry of Health Malaysia	1979	Code APP 11_90 : File PKLB_P_12_28_Jld1 : Primary Health Care : Banci Peringkat II Kawasan-kawasan Kekurangan Kemudahan Kesihatan Semenanjung Malaysia, terbitan KKM.
4	Director of Medical and Health Services Penang	1955	Code APP 13_88 - File RCP_474_55 : Payment of service pensions by postal vouchers and cheque warrants.
5	Director of Medical and Health Services Penang	1954	Health 1536/53(56A) Future of the Red Cross and St. John Relief Teams - Memorandum by the Member of Health.
6	Financial Secretary of the Conference of Federation Executives	1955	Try. (FS) 0.3053 : Allocation to State and Settlement Governments in respect of Medical and Health Services. In *Arkib Negara Malaysia Penang* (pp. 1-3).
7	Huckle, A. A	1955	Health 355_55_2 : Letter prior to Health 355_55_30 : Usage of uniform titles and wording of titles to conform to the nomenclature suggested under the Rural Health Scheme and avoid any possible confusion with the Department of Social Welfare.
8	Member of Health of the Federal Executive Council	1953	File 1987/0000445 JPM/PKN/PP/16/64/5: Health 1580_53(15) : Rural Health Schemes.
9	Member of Health of the Federal Executive Council	1954	Code AP 13_88 : File RCP_898_54 : Jitra Training School and Rural Health Team to undergo 6 months training at Jitra, consisting of 1HA, 1AN, 1MW, and 1 Sanitary Overseer.
10	Miller, J. E.	1948	Code APP 07_91 : File R 422_1948 : Penang Municipal Health Department - Report for Year 1947 : Chief Sanitary Inspector's Report.
11	Office for Trade Union Registration Northam Road Penang	1970	Code APP 3_98 : File ARTU PKS_PP 155_50 : Government medical and health employee National Trade Union 1959 (Kedah state branch).
12	Rees, D. P.	1955	SFO 30_55: Letter to the Secretary of the Treasury, Kuala Lumpur referring to the former's letter Try (FS) 3475_1 requesting for estimate of expenditure on and revenue from anti-malarial works and estimate of hospital fees and other medical revenue.
13	Settlement Council of Penang Meeting Secretariat	1954	RCP 473_55 : Extract of the President's address from the chair for the Settlement Council Meeting held on 24.3.54.

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THE BEGINNING OF COLONIAL HEALTH SERVICES IN MALAYA

Although the concept of UHC was not formally acknowledged in Malaya and Borneo post World War II, the British colonial government had made available health services entitled to residents through public hospitals that were free for use by the public. Apart from the hospitals, outdoor dispensaries – the earliest of which had been established in the late 1880s – played an increasingly significant role in extending medical and health services among the population at large. The first of these were merely outdoor departments of general and district hospitals. By 1900 outdoor dispensaries existed at all government hospitals in the Straits Settlements and the FMS. Travelling dispensaries, including floating dispensaries on the Sungai Perak and Sungai Pahang, penetrated deep into the rural areas and brought many people into contact with modern scientific medicine for the first time, and helped overcome Malay prejudices against modern medicine since they provided treatment (free as well) without requiring hospital admission. In contrast to Malay admissions in government hospitals, figures of Malay attendance at outdoor clinics reflected more closely their ethnic weight, particularly in such predominantly Malay areas as the royal town of Pekan, Pahang, and at Alor Gajah, Malacca. This was also seen in other areas, where they were not the predominant ethnic group, as was recorded at the Butterworth dispensary in the mid-1900s (Tate 2005).

RURAL HEALTH SERVICES PROVIDED BY THE COLONIAL GOVERNMENT IN MALAYA BEFORE 1953

Before the Rural Health Scheme was introduced in 1953, the distinction between private non-governmental organisations (NGOs) providing medical services and public health services was not specifically drawn as the Red Cross and St John teams were provided financial resources by the colonial government to carry out duties of medical services in rural areas. Even as far in as June 1954, the Red Cross and St John teams were still the driver of the provision of rural health services in Malaya. The Red Cross and St John volunteer teams who were carrying out health services in the villages had to be flown in from England and transported to the interiors (Member of Health of the Federal Executive Council 1954).

On 10 July 1947, Sir Gerard Gent, Governor-General of the Malaya and Singapore was appointed St. John Ambulance Association (SJAA) Patron and his wife, Lady Gwendolen Gent, as Patroness. Dr. Robert Barr MacGregor (the last Commissioner St. John Ambulance Brigade or SJAB Malaya before the war), reminded the members that, "…the work of St. John Ambulance does not, and cannot conflict in any way with the work of the doctors, or of professionally trained nurses or hospital assistants. The St. John Ambulance work can never rival that of the professional men and women and it was not intended to be." Yet the St. John Ambulance Association and Brigade were at the forefront when the Federal Government initiated programmes to promote health awareness and improve the health services in the rural areas as part of the effort to fight a psychological war (Backend War) during the Malayan Emergency against the Communist Insurgency. Sir Gerald Templer, British High Commissioner to the Federation of Malaya requested the St. John Ambulance Headquarters in Britain and Australia to send twenty-five welfare teams to New Villages, in Malaya. New Villages were set up by the colonial government at the peripheries of jungles and were well guarded. Their main purpose was to isolate communist insurgents from obtaining food and medical supplies from threatened small Chinese villages (St. John Ambulance of Malaysia 2014a).

It was only in March 1954 that the suggestion to transfer financial provision from the Red Cross and St John teams, who travelled from the United Kingdom to Malaya, to local formal public health services was considered as stated in a memorandum written by the Member of Health dated 9 June 1954 referenced "Health 1536/53(56A)" stating "The Future of the Red Cross and St. John Relief Teams". Addressed from Penang, it was stated that the conference of the Chief Ministers of the states, Resident Commissioners and British Advisers held on 29 March 1954 raised the question of financial provision for extension of the medical services to the areas now covered by Red Cross and St John teams, which decision was to be made after further study. The Director of Medical Services subsequently carried out a survey designed to find out when, how far and how fast health services could be taken over by the Medical Department in the areas covered by Red Cross and St John teams. The results of which are stated in Table 2.

TABLE 2. Survey to identify the speed Red Cross and St. John teams were to be replaced by the Medical Department in the areas covered by the former (adapted from Director of Medical and Health Services Penang, 1954)

Voluntary organisation	No. of teams	No. of teams remaining after reduction in (year)		
		1954	1955	1956
Red Cross	34	27	13	8
St John	25	18	10	6
Total	59	45	23	14

It was planned that the takeover of Red Cross and St John owned houses by the Medical Department posed no problems regarding maintenance as they were purpose built for health services in accordance to Public Works Department specifications, implying an eye towards the government taking over health operations as an eventuality at the time of their construction. Vehicles were treated similarly. "A survey of these and other buildings constructed from Emergency funds is now being carried out by the Public Works Department with a view to

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entering financial provision for maintenance in the Federal Estimates for 1955." The use of "Emergency funds" with the word Emergency capitalised indicated that they were built with the intention of carrying out measures in line with the Malayan Emergency that began in 1948 (Director of Medical and Health Services Penang 1954).

THE RURAL HEALTH SCHEME IN MALAYA FROM 1953 TILL 1956

The Draft Development Plan of the Federation of Malaya 1950-1955 contained the prospectus of the Rural Health Scheme (Rudner 1972). The first model rural health centre was designed in 1953, built in 1954 in Jitra town in the state of Kedah, one of the northern states in Malaya (Ismail 1974), and started operations at the end of 1954. The intention for the rural health centre in Jitra, Kedah was for it to be a training centre for "Rural Health Teams", which comprised of one hospital assistant, one assistant nurse, one midwife, and one sanitary overseer. The duration of training for a rural health team was 6 months. Hence its designation of "Jitra Training School." These four-person teams would then be attached to each Rural Health Centre to serve the community in rural areas and villages. The initial intention of the formation of the Rural Health Teams was to employ in situ health facilities in rural areas to replace the Red Cross and St John teams who were flown in to carry out the work of the proposed Rural Health Teams in the villages (Member of Health of the Federal Executive Council 1954).

Further to this, a positive assessment of the benefits involved in the Rural Health Scheme, especially with regards to cost, was reinforced by earlier successful examples of replacing the Red Cross and St John teams with the Jerteh Rural Health Centre in Terengganu and the building of a brand new Rural Health Centre in Astana Raja in Negeri Sembilan. The cost of maintaining the staff of such a Rural Health Centre was estimated at $12,872 as opposed to the annual cost of maintaining a Red Cross team at $15,000. This latter figure neither included the cost of medicines or transport, much of which was already being borne by State/Settlement Governments, nor the cost of passages between the United Kingdom and Malaya for the teams. Figures were quoted in Malaya and British Borneo Dollars (the de facto currency from 1953 to 1967). Each Rural Health Centre would have the basic staff similar to a Jitra Training School trained Rural Health Team that covered a population of 10,000 (Member of Health of the Federal Executive Council 1953).

LESSONS FROM THE RURAL HEALTH SCHEME IN MALAYA FROM 1953 TILL 1956

There is a mistaken assumption that the British colonial administration ignored rural health services, having implemented a system that was very much urban based and that failed to meet the health needs of the rural population (Jaafar et al. 2007b). On the contrary, the Rural Health Scheme, which began in 1953 and ended in 1956, remains a potent lesson on the importance of geographic access to health care for every single citizen of the nation. Although access today implies more than geographic consideration, it is an often-overlooked importance of the Rural Health Scheme in laying the public health foundations for primary care services. Its historical significance was underlined by the scheme's relation to the (then impending) Malayan Emergency and New Villages, where its stated objective of "winning the hearts and minds of the people" through improvement of health services for populations living at the fringes of established population centres, especially New Villages was impressive and well carried through (Ismail 1974). More recently, the Rural Health Scheme was recognised in the context of forming the foundation of the evolution of public health care in Malaysia (Mahmud 2013). The Rural Health Scheme had taught health policy makers that a solid backbone for UHC can be formed with but a few strategically located rural primary health facilities, in conjunction with sufficient funding for a basic portfolio of primary health services and an accessible network of hospitals.

The visible impact of the Rural Health Scheme was made all the more impressive with the scarce resources available to the colonial government in the early to mid-1950s, having had to be distributed across the empire. This was because Malaya remained indirectly represented at the crucial 1952 Commonwealth Finance Ministers Conference as well as at early Rubber and Tin International study Group Conferences (Rudner 1972, 1976). The Colonial Development and Welfare Fund set up under the Colonial Development and Welfare Act 1940 in the UK, allocated an estimated 18,000,000 pounds sterling for the whole of the British Empire from 1954 to 1955. For the nation-specific *1956–1960 Development Plan for Malaya* or the *Second Federation of Malaya Development Plan*, the funding amounted to 130,200 pounds sterling with the Colonial and Development Welfare Fund contributing 4,400 pounds sterling (Morgan 1964). The costs for construction of Rural Health Centres in 1954 and subsequently, District Health Centres in 1955 were borne by funds obtained from the Colonial Development and Welfare Fund (Director of Medical and Health Services Penang 1954). Malaya gained independence from the British Empire on 31 August 1957, which partly explained the reduced allocation. It was also noted that "tin-miners in Malaya are getting satisfactory economic prices…" (Morgan 1964: pp.72, 73), which bolstered the natural resource-based economy. Having said the above, British colonial sterling assets were still abundant in Malaya in 1956, just one year before Malaya's independence, with an estimated value of GBP280 million. In fact, most of the increase in colonial assets took place within the period 1949–1955, which coincided with the *Draft Development Plan of the Federation of Malaya 1950–1955*. Part of that British financial investment contributed to the implementation of the Rural Health Scheme 1953–1956. Hence, the lesson here would be

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that the journey to UHC is not dependent on an abundance of financial input in view of the scarcity of resources in Malaya at the time but rather on a well planned and executed national development plan that integrates sound national health policy.

For the Rural Health Scheme, the nation's major health activity for extending coverage to the entire population – World Health Organization (WHO) consultation was involved from the beginning in 1953. Further cooperation was solicited by the Ministry of Health every few years and offered by WHO, resulting in 1968, a major 15-year review of the programme carried out by WHO. This review found substantial progress in rural health services and advised continued WHO cooperation, with certain administrative changes such as a broadened scope of functions at the midwife clinics (also known as midwives' houses). It also suggested a mandatory period of service for Malaysian medical graduates to get them posted to the sub-health centres, which were also known as Sub-District Health Centres (Fulop & Roemer 1982).

The Rural Health Training Centre and its product, the Rural Health Team, was a forerunner to the "district health team" described in Chapter 3 of the World Health Organization training textbook, "On being in charge: A Guide to Management in Primary Health Care" published in 1992. Training of staff, as stated in Section 3.6, mentioned the need to look for skills or performance, and not merely focusing on theory as a means of solving health problems on the field. Modernisation of tools and resources within the civil service (Director of Medical and Health Services Penang 1955) and staff empowerment, including possible unionisation, were important as well (Office for Trade Union Registration Northam Road Penang 1970). A key learning principle of health policy here is that human resources are the most expensive form of health resource, which is one reason why management should provide for all health staff to maintain high standards of performance (McMahon et al. 1992).

HEALTH IMPACT OF THE FIRST RURAL HEALTH CENTRE FOR THE STATE OF PERAK IN PARIT TOWN

In the official *Today in History* (commonly known as, "*Hari Ini Dalam Sejarah*") archive documents maintained by the National Archives of Malaysia, the first Rural Health Centre for the state of Perak was in Parit town. This centre was officiated by Her Royal Highness, the Raja Perempuan of Perak on 5 September 1956 (Hari Ini Dalam Sejarah 2013). In attendance was Dr. R. E. Anderson, the Director of Medical Services of the Federation of Malaya, Baba Leong Yew Koh, the Medical and Health Officer of Perak, and the Minister of Health in the first Alliance cabinet from 4 August 1955 until the first Rahman cabinet reshuffle on 31 August 1957 (Hari Ini Dalam Sejarah 2011).

The construction of the Parit town Rural Health Centre, which cost $200,000 (Malaya and British Borneo dollars), was funded by the Colonial Welfare and Development Fund while medical equipment was obtained from the United Nations Children's Fund (or UNICEF as it was known after 1953 when it changed its name from the United Nations International Children's Emergency Fund). The Rural Health Centre was designed to serve a population of 50,000 with four satellite health centres being planned. The government intended to build eight more Rural Health Centres to serve the needs of other areas throughout the state of Perak (Hari Ini Dalam Sejarah 2013).

The Rural Health Centre in Parit, Perak certainly deserved recognition. For example, medical research led by Florence Adam Thomas, a Medical Officer in Malaya and later of the Institute for Medical Research Kuala Lumpur, was able to study the diagnosis and treatment of patients with diseases peculiar to the local populace such as kwashiorkor. Her description of kwashiorkor's aetiology was not only axiomatic but relevant to clinicians and nutritionists even in the decades after her paper's publication, as emphasized in the following statement from her article, "Excessive carbohydrate intake in infancy is the rule. This series of cases includes a few very young children. That cases in such young subjects occur may be because bottle feeding is extremely common. Many babies are fed from birth on dilute sweetened condensed milk (frequently one fluid drachm to one oz. of water), and rice pap is given very early." (Thomson 1954) Stemming from the importance of papers like Thomson's on nutritional diseases in Malaya, the World Health Organization Regional Committee for the Western Pacific in its Fourth Session announced as per particular WP/RC4/R12: 1955 Programme Priorities point number 4, "…in allocating priorities to these programmes, high priorities should be given to ensuring the maximum aid for the control of… nutritional diseases" (World Health Organization 1953: p. 6).

On the ground, the severity of nutritional deficiency especially among infants was borne out as seen in the Municipal Annual Report of 1947 for Penang island, prepared by W H Brodie, Municipal Health Officer of Penang island. There were reported cases of enteritis in infants, with cases seen not only in the 4 to 12 months old group, but in the 0 to 1-month old group or neonates and 1 to 3 months old group as well. It was documented that the disease was most likely caused by "sweetened condensed milk" being given at the various stages of infancy "in lieu of or as an adjunct to breast feeding" (Brodie 1948). This was the same conclusion drawn from research conducted in Parit Rural Health Centre in 1954 (Thomson 1954).

DISTRIBUTION AND DUTIES OF HUMAN RESOURCES FOR THE RURAL HEALTH SCHEME

The Rural Health Scheme revolves around a distinctive three-tier network of centres formed geographically, not unlike in principle to the two-tiered hub and spool of present day hospital networks (IHH Healthcare Berhad 2012). The administrative centres were the District Health Centres, followed by the Rural Health Centres, and lastly,

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the Midwives' Houses to fulfil the core business of family health within the ambit of primary health care services. In 1955, much discussion was held before settling on the nomenclature of the centres in the three-tier network (Band 1955; Huckle 1955). Nothing defined these centres better than their staffs, for the lack of physical facilities at the time meant that human resources was the single largest input and driving factor of any degree of success in improving primary health care. The distribution and duties of the staff is stated in Tables 3 and 4 respectively.

TABLE 3. Distribution of types of health centres and their staffing within the Rural Health Scheme (adapted from (Member of Health of the Federal Executive Council 1953))

Type of Health Centre	Staff	Number of personnel
District Health Centre (DHC)/ Main Health Centre (MHC) serving 50,000 population	Dental Officer	1
	Medical and Health Officer	1
	Health (Nursing) Sister	1
	Dental Nurse	1
	Health Nurse	1
	Hospital Assistant	1
	Health Inspector	1
	Pupil Midwife	2
	Clerk	1
	Male Dental Attendant	1
	Female Chairside Attendant	1
	Dispensary Attendant	1
	Female Attendant	1
	Driver	2
	Sanitary Labourer	2
	Messenger	1
	Gardener	1
Sub-district Health Centre (SHC)/ Rural Health Centre (RHC) serving 10,000 population	Assistant Nurse (AN)	1
	Dispenser	1
	Sanitary Overseer	1
	(Assistant Health Inspector)	1
	Midwife	1
	Dispensary Attendant	1
	Female Attendant	1
	Driver	1
	Sanitary Labourer	2
Midwife Clinic cum Quarters (MCQ)/ Midwives' Houses serving 2,000 population	Midwife	1 or 2

DEVELOPMENT COSTS OF NEWLY ESTABLISHED RURAL HEALTH CENTRES IN MALAYA

From local estimates using Malaya and British Borneo Dollars as the currency of reference, the cost to build the physical premises of one District Health Centre was $200,000, one Sub-District Health Centre was $50,000 and

TABLE 4. Duties of primary care staff within the Rural Health Scheme (adapted from (Member of Health of the Federal Executive Council 1953))

Staff	Duties
Medical and Health Officer	Statutory duties of a health officer, the holding of clinics at centres, general supervision of the work of all staff. He would have no hospital duties.
Dental Officer	Similar to Medical and Health Officer but for dental duties.
Dental Nurse	Duties in connection with school children only.
Health Sister	In charge of all nurses, assistant nurses and midwives. The holding of antenatal, postnatal and infant health clinics.
Health Nurse	Supervisor of midwives and home visiting of maternity cases with midwives.
Assistant Nurse	Assistant to Health Nurse.
Midwife	Domiciliary midwifery and home visiting.
Hospital Assistant	Supervision of dispensers, stores supplies etc. Latterly known as the medical assistant, the hospital assistant is a multipurpose health auxiliary who also treats common ailments (Fulop & Roemer 1982).
Health Inspector	Statutory duties, environmental hygiene and supervision of sanitary overseers.
Sanitary Overseer	Assistant to Health Inspector.
Clerk	Clerical duties in connection with District centre.
Pupil Midwife	Attached to the midwife of the centre for instruction in domiciliary midwifery.

one Midwife's House was $2,000. As for staff costs, one District Health Centre required $72,279 per annum, one Sub-District Health Centre required $12,872 per annum and one Midwife's House required $2,442 per annum. Annual recurrent costs were $22,000 for one District Health Centre and $12,000 for one Sub-District Health Centre. Equipment costs on opening one District Health Centre was $13,000 and one Sub-District Health Centre was $7,000. One vehicle would cost $6,000 with each Sub-District Health Centre equipped with one and each District Health Centre equipped with two (Member of Health of the Federal Executive Council 1953).

As an estimate of the value of the Malaya and British Borneo Dollar in 1953, which was a new currency introduced in 1952, it would be helpful to appreciate the historical origin of the currency and its peg on the sterling at the time. The peg ensured the stability of health costs consistent with a three-year rural health development plan. Partly at the behest of local merchants, the Straits Settlements moved to a de jure gold standard in 1906. Britain was already on the standard and the change automatically implied fixity of the sterling/Straits dollar exchange rate. The Straits dollar's link to the gold standard officially came to an end in 1914 with the outbreak of

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World War I, but the peg to sterling remained. The peg to sterling was restored in 1945 following the defeat of Japan and expanded when the Board of Commissioners of Currency, Malaya and British Borneo was established in 1952, encompassing Singapore, Malaya, Sarawak, North Borneo, Brunei and the Riau archipelago. The peg was 60 dollars = 7 British pounds, about 8.57 dollars = 1 British pound (Monetary Authority of Singapore 2016). The planned development of Rural and District Health Centres in 1953 is stated in Table 5.

TABLE 5. Adoption of a plan in 1953 to coordinate building of rural health development facilities – non-cumulative (adapted from (Member of Health of the Federal Executive Council 1953))

Type of health centre	Year					
	1954	1955	1956	1957	1958	1959
District Health Centres/ Main Health Centres	4	4	4	4	4	5
Sub-District Health Centres/ Rural Health Centres	16	16	16	16	16	20
Midwife Clinic cum Quarters/ Midwives' Houses	80	80	80	80	80	100

It is noted that patients neither need to pay any fees on contact with health care services nor after. In other words, public health services were completely free for use and were funded by taxation. This is still true today for public health services.

EVOLUTION OF THE RURAL HEALTH SCHEME TO THE RURAL HEALTH SERVICE

In a memorandum by the Member of Health in 1953 referenced "Health 1580/53(15)", a breakdown of the costs of running the District Health Centres, with its subsidiary facilities of Sub-District Health Centres and Midwives' Houses were detailed. The term Sub-District Health Centre was used interchangeably with Rural Health Centre. Of importance is that the plan required a certain number of these centres to be built and staffed every year from 1954 to 1959, which extended into the Second Malayan Development Plan. The rationale for the numbers given was based on the maximum number of personnel that could be trained by the likes of Jitra Training School running at full capacity. Obtaining a sufficient number of Assistant Nurses was the limiting factor as five District Health Centres to be built per year would require 25 Assistant Nurses and 125 Midwives, or alternatively 150 Assistant Nurse Midwives to be trained per annum. This was because Assistant Nurses were also required in the hospitals and certainly at these Rural Health Centres and Midwives' Houses. In other words, a training school such as Jitra had to train 6 'Rural Health' teams every 6 months to meet the demand as planned.

Initially, the Rural Health Scheme introduced in 1953 was planned for one physician, stationed at the District Health Centre, to serve a population of 50,000. The surrounding Sub-District Health Centres, each serving 10,000 people, would be staffed by various auxiliary personnel, and the most peripheral units – midwives' houses – were to be staffed by assistant midwives. As more personnel were trained, the standards of service and staffing were raised by broadening the scope of services provided and by training auxiliaries such as assistant midwives to provide general primary care (Fulop & Roemer 1982). The conversion from the three-tier Rural Health Scheme, occasionally known as the Rural Health Service Scheme, to the two-tier Rural Health Service system took place in 1966. The types of health centres found in the three-tier system transitioned into the clinics found in the two-tier system after 1966 are listed in Table 6.

TABLE 6. Transition from a three-tier to a two-tier rural health system

Rural Health Scheme (pre-1966)	Rural Health Service (post-1966)
District Health Centre (DHC)/ Main Health Centre (MHC) serving 50,000 population	Health Clinic/ "Klinik Kesihatan" serving 15,000 to 20,000 population (each staffed by physicians)
Sub-district Health Centre (SHC)/ Rural Health Centre (RHC) serving 10,000 population	
Midwife Clinic cum Quarters (MCQ)/ Midwives' Houses serving 2,000 population	Village Clinic/ "Klinik Desa" serving 3,000 to 4,000 population (each staffed by two community nurses)

As for the St. John Ambulance Association and Brigade, it maintained its relevancy in line with the description of the institutions' role, which was health auxiliary work in support of professional health services and hospitals. The St. John Ambulance Association (SJAA) experienced a revival in the year 1957 when YAB Tun Abdul Razak bin Dato' Hussein, the then Deputy Prime Minister Federation of Malaya, joined SJAA as its President (St. John Ambulance of Malaysia 2014b).

Based on findings of operations and research carried out in collaboration with the World Health Organization (WHO) in 1969-1971, the conversion of the three-tier system into a two-tier system was expected to take at least 15 years, beginning in 1969. However, the rural population coverage in 1975 was still below 50%. As a stop-gap measure, mobile teams were being set up to cover remoter areas until permanent facilities were made available (Director General Ministry of Health Malaysia 1979).

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It was not until 1996, when the "Rural Health Service" of 1966 was renamed to "Primary Health Care" services or PHC in short during the 7th Malaysia Plan (Jaafar et al. 2007b), that migration to urban areas led to a 11:9 urban population to rural population ratio (Wong & Phua 2008) with rural health clinics having a ratio of facility to population of 1:17,506 compared to 1:30,797 for urban rural health clinics in year 2000 (Jaafar et al. 2007b).

CONCLUSION

The Rural Health Scheme did not initially start as the all-encompassing public health sector that it is known as today. The British-provided rural health care was actually meant as a tool of psychological warfare, which was introduced by Sir Gerald Templer, and refined by the then Director of Operations, Sir Harold Briggs in the form of the "Briggs Plan". "From June 1950 the resettlement scheme… to regroup Chinese squatters suspected of aiding Communist insurgents and relocate them in controlled 'New Villages'… was put into effect and was officially treated as an item of rural development" (Rudner 1972: p.67). This was after World War II when insurgencies were sprouting around the empire and a more economical and effective form of warfare was sought. A public backlash ensued that demanded that the same attention to welfare be provided for indigenous peoples living in rural areas. Thus, the Rural Health Scheme was born (Ismail 1974; Noh & Jaafar 2011). It should be noted that estate hospitals were not part of the Rural Health Scheme; they were funded by the plantation companies for their own indentured workers, who were mostly of Indian descent.

The approach taken to health care in the Rural Health Scheme was pioneering because the focus shifted from curative services provided by hospitals to maternal and child health services provided by primary care centres (Mahmud 2013). If these primary care centres detected illness requiring hospital care, the centres would act as feeders to urban hospitals that were already available. The stumbling block in the way of the success of the scheme, as is even the case today, is that there is a need to achieve a critical mass of trained personnel to make the system work and to ensure that there are sufficient human resources who are able and willing to work in the farthest rural reaches of the land. It was only in the 1970s that a sufficiently large civil service-based pool of health care workers became available through ample training facilities coupled with burgeoning inland roads that made it possible for urban-based staff to travel to rural areas to provide health care services.

In short, rural health accessibility was the first major health initiative by the colonial government that was conceived in the *Draft Development Plan of the Federation of Malaya 1950–1955* and implemented in the Rural Health Scheme 1953–1956 that directly led to improving the access dimension of UHC. By then, some degree of financial risk protection existed through government-funded public hospitals, clinics and dispensaries; quality was improved through the introduction of new treatment modalities such as X-rays, research into beri-beri and antimalarial work; and population coverage was extended by allowing certain hospitals (apart from ones exclusively serving patients of European descent) to accept any sick patient who presented themselves. Before the introduction of the Rural Health Scheme in 1953, the relative density of health facilities in urban areas meant that the large majority of the population living in rural areas was relatively neglected (Financial Secretary of the Conference of Federation Executives 1955; Miller 1948; Rees 1955; Settlement Council of Penang Meeting Secretariat 1954) and only served by travelling St John Ambulance and Red Cross teams flown in from London. Thus, rural health accessibility was the foundation that led Malaya and then Malaysia onto the road to UHC that enabled improvements in rural health and public health in general; all these efforts have contributed to Malaysia's health status achievement today.

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Justen Wong Han Wei
Health Policy and Management Unit
Department of Social and Preventive Medicine
Faculty of Medicine
University of Malaya
50603 Kuala Lumpur
Malaysia

and

Northeast District Health Office
Jalan Perak, 11600 Pulau Pinang
Malaysia

Ng Chiu Wan
Su Tin Tin
Health Policy and Management Unit
Department of Social and Preventive Medicine
Faculty of Medicine
University of Malaya
50603 Kuala Lumpur
Malaysia

Corresponding author: Justen Wong Han Wei
E-mail: justen.wong@gmail.com

Tel.: +604-282 8500 ext. 209
Fax: +604-281 9500

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