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The evolution of social health insurance in Vietnam and its role towards achieving universal health coverage

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ABSTRACT

Our research examines the development of social health insurance (SHI) in Vietnam between 1992 and 2016 and SHI's role as a financial mechanism towards achieving universal health coverage (UHC). We reviewed and analysed legislation from the Government of Vietnam (GoV) and performance data from the GoV and the World Bank. Stages of development were identified from legislative change leading to change in SHI functioning as a public financing mechanism: revenue collection, pooling of risk, and purchasing. Movement towards UHC was assessed relative to: population coverage, benefit coverage, and financial protection. Vietnam has implemented SHI through five stages: Stage I (1992–1998), Stage II (1998–2005), Stage III (2005–2008), Stage IV (2008–2014), and Stage V (2014 onwards). Coverage has widened from a compulsory scheme for civil servants and pensioners and a voluntary scheme for others, to a scheme that targets the entire population. However, UHC has not been achieved with 19% of the population uninsured in 2016 and high out-of-pocket payments. The benefit package includes a wide range of services and many expensive medications and considered to be generous. It is recommended that Vietnam focus on improving population coverage rather than further expanding the benefit package to achieve UHC.

1. Background

In 1948, the World Health Organization (WHO) declared "health" to be a fundamental human right [1]. Subsequently, the 1978 Alma-Ata declaration of *Health for All* asserted the responsibility of governments to provide adequate health and social measures to enable all people to attain the highest possible level of health [2]. The precursor is universal health coverage (UHC) [3] - the ability of all people to access adequate quality health services without financial obstacles [4–6]. There are three inter-related dimensions of UHC: coverage of the entire population, provision of the range of services necessary to meet needs, and financial protection against out-of-pocket (OOP) and catastrophic expenditure [7].

While there is "no one way to achieve UHC", it is not possible without a healthcare financing mechanism, public and/or private [8]. Recommendations are that the mechanism should be publicly-governed and mandatory [9,10], that population coverage should be prioritised over the breadth of the benefit package [9], and that enrolment of all members of a household (household enrolment) should be undertaken to lessen the impact of economic disadvantage, reduce adverse selection and expand coverage [11].

1.1. Social health insurance: a health financing mechanism towards achieving UHC

Social health insurance (SHI) is a health financing mechanism that embodies each of three basic functions of a public financing mechanism (revenue collection, pooling of risks and purchasing), and can facilitate UHC [8]. SHI was first introduced in Germany in 1883 [12], and is in operation in many countries, including Vietnam [10,13].

Country-specific implementation of SHI involves varying degrees of autonomy from the government but adopts core principles and objectives. The government usually controls participant eligibility [12], with population coverage initially restricted to specific groups (such as government employees) [4,10,14]. The government usually provides partial or full

Abbreviations: DRG, Diagnosis related group; FFS, Fee for Service; GoV, Government of Vietnam; HIV/AIDS, Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome; MoH, Ministry of Health; OOPs, Out-of-pocket payments; PPC, Provincial People's Committee; SHI, Social health insurance; UHC, Universal health coverage; VND, Vietnam Dong; VSS, Vietnam Social Security Agency; WHO, World Health Organization.

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subsidization to vulnerable groups [12]. There is open enrolment, so no one can be excluded on the basis of risk [14]. Inherent to the concept is the right to a defined package of health benefits available to contributors only; and financial protection against catastrophic health care expenditure [15]. Premiums are set in accordance with average population risk – community rating [4] but must reflect capacity to pay [14]. SHI is intended to embody a high level of cross-subsidization between risk categories [10].

Successful SHI systems are found in more urbanised countries with administrative systems that facilitate registration of members and collection of contributions by payroll deductions, and electronic transfers [10]. Other features of a country that favour SHI are a dominance of the formal sector in the labour market, capable public service administrators, good quality health care infrastructure, a preference for SHI among citizens, and political stability [10]. At least 27 countries have supported a state of UHC through the implementation of SHI [8], although a number have since converted to general taxation systems [13].

1.2. The historical foundations of social health insurance in Vietnam

Consequent to the collapse of the Soviet Union in the late 1980s, reduced international aid to Vietnam led to an economic crisis [16]. To adapt to the changed circumstances, in 1986, the Government of Vietnam (GoV) implemented economic reforms, namely “Doi Moi”, that introduced “a socialism-oriented market economy” [17]. The reforms began by allowing private sector development, foreign investment and greater autonomy in public enterprises, and by reducing state subsidization of many sectors including health care [18,19]. In consequence, the health system faced difficulties with reduced investment in infrastructure, shortages of medication and equipment, and in meeting payment of salaries to medical professionals. Together, these factors adversely affected health service quality [20,21].

In response, a cost-sharing mechanism was established in 1989, with the financial burden partially shifted to patients [22,23]. The introduction of this new financing mechanism led to criticism that it had resulted in reduced accessibility to health services, particularly for vulnerable groups such as older persons, children, the disabled and others unable to work and the poor [24]. To address this criticism, the GoV implemented changes to the health financing mechanism. Firstly, they permitted the private provision of medical services [25] and supply of pharmaceuticals [26]. In 1992, SHI was introduced to cover specified health services within the public sector [19].

Several articles have reviewed reforms associated with the introduction of SHI system in Vietnam [19,21,27–31] including the processes involved in policy development (inception to 2013) [29], the role of stakeholders in policy implementation (1989 to 2014) [30], the introduction of SHI [21], the effectiveness of SHI's health financing functions during implementation up to 2007 [28] and in 2008 [19] and an assessment of the barriers to achieving UHC through a comparison of the Vietnamese and Korean SHI systems in 2009 and 1977 respectively [31]. Studies have also identified multiple pools and fee-for-service as risks to the sustainability of the system [21], and the need for continued evaluation of reforms in terms of impacts on key outcomes and the political dimensions of health reform [28]. Solutions to improve the financing system, including an argument for the expansion of SHI coverage through the tax system have also been suggested [19]. Further research to support the evolution of “universal health insurance” was recommended by Ha et al. (2014) [29]. The current financial performance of SHI in Vietnam is unknown, and there has been no assessment linking SHI development to its financial performance and UHC objectives.

This paper extends the aforementioned works and aims to: i) examine the development of SHI in Vietnam during 1992–2016 and its contribution as a financial mechanism towards the goal of achieving UHC; ii) highlight some key lessons in the roadmap to UHC; and iii) provide policy recommendations based on underlying economic principles, socioeconomic conditions, and institutional realities.

2. Materials and methods

We undertook a desk review of GoV's documents pertaining to SHI, supplemented by data reported by the World Bank and other publicly available sources.

3. Data sources

For the period 1992 to 2016, a list of all legislation - including Laws, Decrees, Circulars and Decisions of the GoV - relevant to the development and implementation of SHI in Vietnam - were identified through a systematic search of the Legal Normative Document (http://vbpl.vn/TW/Pages/vbpqen.aspx) and the Legislation Library Website (https://thuvienphapluat.vn/). To be eligible for review, documents were required to include “social health insurance” in their titles and pertain to non-sectoral funds.

Materials on the performance of SHI as a financial mechanism were obtained from the Ministry of Health (MoH) and the Vietnam Social Security Agency (VSS). Documents identified for inclusion a priori were *Health Statistics Yearbooks* and *National Health Account* from the MoH; and *Annual Progress Reports and Health Insurance Reports* from the VSS. Data were sought from the commencement of SHI (where possible) until the latest available data release.

The Health Statistic Yearbooks (1992–2016) provided data on health expenditure on treatment and prevention and the SHI coverage rate [32]. The *Annual Progress Reports* of the VSS (2008–2014) provided data on SHI expenditure for compulsory and voluntary schemes (1992–2012 and 2006–2012 respectively) [33]. The *Health Insurance Reports* provide data on SHI expenditure for the compulsory scheme (2014–2016) [34]. The *National Health Account* provides data on OOPs (1998–2012) [35]. Data on OOPs were also retrieved from the World Bank's website for the period (2000–2016) [36] to facilitate inter-country comparisons given that the MoH's definition includes health insurance premiums, which is non-standard.

4. Evaluation and analyses

4.1. Stages of development of SHI in Vietnam

To determine the stages of development of SHI all included legislative documents were examined to identify changes in policy that impacted one or more functions of SHI as a public financing mechanism: collection of revenue, pooling of risk, and purchasing [10].

4.2. Contribution of SHI as a financial mechanism towards achieving UHC in Vietnam

Data on the performance of SHI was assessed with respect to the three dimensions of UHC: population coverage (how many people were covered), scope of benefits (what services were covered), and contributions (premiums and payees, out-of-pocket expenses) across each stage of development. The financial performance of SHI was assessed in regard to annual revenue and expenditure (1992 to 2016, excluding 2013 due to unavailability), and net expenditure for compulsory and voluntary schemes from 2006 to 2012, data in 2013 was unavailable and the voluntary scheme ended in 2014.

Net expenditure was calculated as the difference between annual expenditure and revenue. For the compulsory and voluntary schemes, net expenditure was assessed by per cardholder, technical level of providers, occasion of service and type of service (inpatient and outpatient).

5. Results

5.1. Stages of SHI development in Vietnam

Reform of regulations and policy relating to SHI occurred in five stages (Fig. 1).

5.1.1. Stage I: August 1992 to August 1998

SHI commenced following the release of *Decree 299/HDBT* on 15/8/1992 with implementation of a compulsory scheme for civil servants and pensioners (see Fig. 1), in which premiums were set at 3% of total salary [37], of which 2% was paid by the employer (see Appendix 1). This scheme was then expanded to include a pilot voluntary scheme for the families of workers in June 1994 through *Decree 47/CP 06/06/1994* [38,39]. In this inaugural stage, SHI was overseen by the MoH, and implemented through the newly established Vietnam Health Insurance Agency [40]. Revenue collection and payments were managed at the provincial level by Provincial People's Committees [37]. Four additional stages of development were identified Stage II (1998–2005), Stage III (2005–2008), Stage IV (2008–2014), and Stage V (2014 onwards). Stage II arose consequent to *Decree 63/2005/ND-CP* in August 1998 with the commencement of an official voluntary scheme, the introduction of co-payments [44], the implementation of a single pool and significant changes in administrative structures. Stage III arose consequent to *Decree 63/2005/ND-CP* in May 2005 with *expansions in eligibility for both the compulsory and voluntary schemes and revision of the benefit package and co-payment mechanism and led to the commencement of the third stage of SHI. Stage IV arose through the introduction of the first Health Insurance Law (No. 25/2008/QH12) which was effective from 1st July 2009. Stage V arose in 2014, through amendment of the first Health Insurance Law.*

The SHI scheme was in turn comprised of 61 provincial pools operated by their respective Provincial People's Committee, with some provinces offering a voluntary scheme. There were also four sectoral pools (oil and gas, transportation, public security, and the armed forces) administered by their respective head of agency. Initially, SHI fully-funded services and medications through fee-for-service payments with inpatient "hotel" care funded through a per-diem-payment [41]. In 1995, the central government agencies including the Ministry of Health, Ministry of Finance, Ministry of Social, Invalids and Social Affairs, and the National Committee of Pricing released a new list of eligible health services [42] based on a list from 1989 [23], and set reimbursement price ranges for public providers based on the cost of providing services in public hospitals by level [43]. Provincial People's Committees set specific prices for their province from the price range specified, based on socio-economic circumstances. By 1997, 17 out of 61 provincial funds (28%) were in deficit, having been co-managed with the provincial state budget and leading to appropriation for non-SHI purposes [20]. Concerns also existed about the low coverage rate and differences in benefits available between provinces [20].

5.1.2. Stage II: August 1998 to May 2005

Decree 58/1998/NĐ-CP of 13/8/1998 gave rise to the second stage of SHI development, ushering in the commencement of an official voluntary scheme, the introduction of co-payments [44], the implementation of a single pool and significant changes in administrative structures. The pool was initially administered by the Vietnam Health Insurance Agency within the MoH before being absorbed into the Vietnam Social Security Agency (VSS) - a government organization in charge of implementing social insurance policies - in 2002 [45]. The main SHI functions of the VSS were premium collection, improvement in fund management through centralised fund disbursement of claims received from providers, investment of fund reserves and implementation of SHI policy prepared by the MoH's Department of Health Service Administration [46,47]. The MoH remained responsible for setting policy regarding SHI functions, including setting premiums, designing the benefit package and setting reimbursement prices and co-payments, maintaining a focus on UHC.

5.1.3. Stage III: May 2005 to June 2009

Decree 63/2005/ND-CP on 16/5/*2005* gave rise to expansions in eligibility for both the compulsory and voluntary schemes and revision of the benefit package and co-payment mechanism and led to the commencement of the third stage of SHI. Poor people were transitioned from the "Health care fund for poor people" to the compulsory scheme, with their premiums fully funded by the GoV. To minimise the risk of adverse selection, at least 10% of students/people in a school/commune were required to participate in the voluntary scheme [48]. Within the MoH, the Health Insurance Department was established in 2015 to design SHI policy and provide governance in terms of "administrative management" [49]. In addition to fee-for-service, payment mechanisms were expanded to include capitation in order to address financial sustainability issues [20,50].

5.1.4. Stage IV: July 2009 to June 2014

The first Health Insurance Law (No. 25/2008/QH12, approved by the National Assembly), was released on 14th November 2008 and became effective on 1st July 2009, and marked the start of the fourth stage of SHI development. This stage coincided with the transition of Vietnam from a low income country into a low-middle income country in 2009 as defined by the World Bank, with anticipated reductions of international aid for health, and in turn, the need for greater reliance on SHI to fund care.

The Health Insurance Law comprehensively changed SHI policy by expanding coverage to 25 insurance categories with poor people and children under 6 included within the compulsory scheme, with premiums fully subsidised by the GoV (see Appendix 1). A roadmap was established for compulsory enrolment for the entire population, to commence in 2014 [51]. In 2013, the GoV confirmed its intention to achieve "UHC" by releasing a master plan aimed at expanding SHI coverage to 75% of the population by 2015 and 80% of the population by 2020 [52], with increased coverage to be supported through expanded access to SHI subsidization.

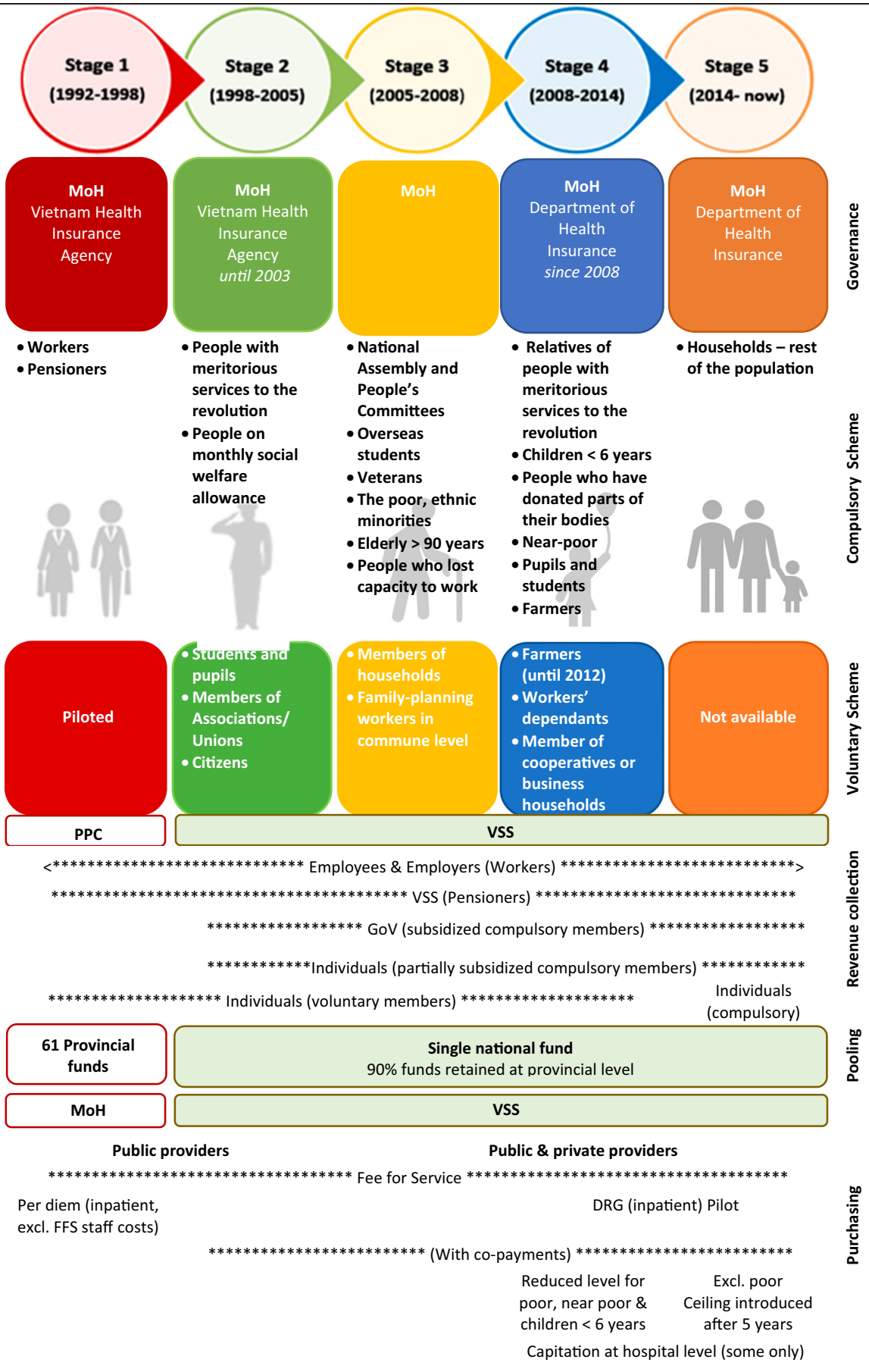
Under the Health Insurance Law, funding arrangements were modified including increases in insurance premiums (see Appendix 1), with 10% of premiums received from each province to be retained centrally for administrative purposes [51]. The remaining provincial funds were to be used to reimburse health care costs incurred for curative examination and treatment at the provincial level. Co-payments were revised on a group-by-group basis. Provider payment mechanisms were modified to include capitation payments for primary health care providers [51,53], implementable at provincial and district levels. To encourage implementation, 20% of any surplus attributed to capitation could be used to reward hospitals, even if the total expenditure of the province was in deficit. The use of diagnosis related group (DRG) payments was defined in the Law due to the perceived unsustainability of fee-for-service, and piloted in four indications (treatment of pneumonia for children, treatment of pneumonia for adult, caesarean section and normal delivery).

In 2012, the GoV released Decree No. 85/2012/NĐ-CP to regulate institutional arrangements and financial mechanisms of public health facilities. Through this Decree a schedule (road map) was established to withdraw all government subsidization for public hospitals incurred outside SHI, e.g. salaries, electricity, capital equipment depreciation and research by 2016 [54], increasing reliance on SHI to fund health expenditure.

5.1.5. Stage V: June 2014 onwards

In June 2014, the Health Insurance Law was amended through Law No.46/2014/QH13 to reclassify the eligibility categories, eliminate the voluntary scheme, and schedule premium increases (see Appendix 1), and to change the mechanism of collection of revenue and revise the benefit package (see Appendix 2). The SHI categories were reclassified based on source of premium payment, and included a new category for household enrolment [55]. The household category required all household members not eligible for any other SHI scheme to enrol together and pay the combined premium. The objective of the household scheme, to maximise coverage and prevent adverse selection through enrolment of proportionally greater numbers of sick people. These changes in turn led to increased involvement of the Provincial People's Committees at an administrative level, and increased financial responsibility of the Committees [55]. One sectoral health insurance pool for the armed forces remained independent [56].

In 2015, a revised list of reimbursement prices for health services under SHI payment was released by the MoH. This revision was to ensure consistency, with all hospitals at the same level having to charge the same price for the same service to address the differences between provinces introduced by the authority of Provincial People's Committees to set health



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service price from Stage I. Further, at this time, prices were increased to cover salary of health care workers [54,57]. In the same year, the use of provincial level facilities no longer required referral from district level health facilities [58]. Co-payment requirements for the poor and other fully-subsidised individuals were stopped. New regulations were introduced on management of health insurance fund surplus to support primary health care (but were not implemented).

In 2015, the MoH commenced a project to enable electronic claims management, provide insured persons with a smart card and collect information for policy making [59]. The GoV regulated principles in electronic transactions in SHI management [60]. In 2017, 97% of service providers had access via a portal to the VSS claims management system, and 60% connected daily [61]. However, the smart card was yet to be implemented.

5.2. Contribution of SHI as a financing mechanism towards achieving UHC in Vietnam

5.2.1. Population coverage

Population coverage across the stages of development of SHI are illustrated in Fig. 2. SHI coverage increased significantly from 5% to more than 70% between commencement of Stage I (1993) to the commencement of Stage V (2014). By 2016, coverage had reached almost 82% of total population. Compulsory enrolment was largely stable during Stage I and Stage II with growth in enrolments due to the inclusion of voluntary members, including poor persons, in Stage II. At the end of Stage II, voluntary members comprised two-thirds of enrolments, of which about two-fifths (41%) were poor persons. In Stage III, the inclusion of a compulsory poor scheme led to significant growth in enrolments: the number of poor people covered increased from 6.39 million in 2005 to 15.18 million in 2006. However, growth in other compulsory enrolments increased 76% between 2005 and 2008 (from 7.69 million to 13.53 million, respectively). Newly-included groups in the compulsory scheme during Stage III were older people, veterans, and people no longer able to work [50]. Premiums for these individuals were fully subsidized. At the end of Stage III, SHI coverage had increased to 46% of the population. Stage IV produced the most marked upturn in enrolments in the general compulsory scheme (i.e., excluding the compulsory poor), when enrolments more than doubled between 2008 and 2009 – from 13.53 million to 30.74 million. At this time, the scheme was expanded to include children under 6 years of age and the near-poor, which were fully and partially subsidized, respectively. Further growth occurred with the inclusion to the voluntary scheme with school pupils and higher education students in 2010 and farmers in 2012. In turn, there was a significant reduction in voluntary membership at the commencement of Stage IV. Nevertheless, the voluntary scheme experienced growth during Stage IV due to an expansion in eligibility. Stage V saw a further expansion of the compulsory scheme coinciding with the cessation of the voluntary scheme.

5.2.2. Provision of services

Since inception, the core elements of the SHI benefit package have always comprised inpatient and outpatient services, which include consultation fees, pathology, medications, and consumables (Appendix 1), with the first formal listing released in 1995 [43]. Beyond Stage II, the benefit package was widened to include pregnancy check-ups and transportation for vulnerable groups [50] in Stage III, introduction of partial payment for higher-level services when lower-level services were by-passed [51,53] in Stage IV, and treatment of squint, short-sightedness and refractive defects for children under 6 and treatment of self-inflicted injuries or physical or mental injuries caused by the patient's illegal acts [55] in Stage V. However, some benefits introduced in Stage IV proved to be transitory, being removed in Stage V (Appendix 1). The benefit package has never covered preventive health care, and has only covered HIV/AIDS and tuberculosis treatment since Stage IV, coinciding with the reduction in international aid [62] [63].

An essential drugs list was introduced at the end of Stage II (in 2005) and underwent modifications in each subsequent stage. At the commencement of Stage V (in 2014), the essential drugs list contained 1201 types of medication including combination therapies, and included expensive drugs which were not in the essential drug list of the WHO (e.g. erlotinib, gefinitib, sorafenib, tacrolimus and imatinib) [64] (Appendix 1). In 2018, the list was expanded to 1030 types of medication including combination therapies [65].

5.2.3. Financial protection from out-of-pocket payments (OOPs)

During Stage I there were no co-payments under SHI, including for prescribed medicines. In Stage II, a 20% co-payment was introduced, except for veterans, although prescribed medicines were fully subsidized for most of this Stage [66] and a co-payment ceiling equivalent to six-months basic salary applied. The voluntary scheme had lower levels of reimbursement per service compared to the compulsory scheme, and reimbursement ceilings for several expensive services including heart surgery and hemodialysis. In Stage III, co-payments remained at 20% but the general ceiling for co-payments was removed. Rather, ceilings were applied for outpatient services (voluntary schemes only) and to a list of expensive services (both schemes) [67,68]. Levels of reimbursement remained more generous for the compulsory scheme. In Stage IV, all payment ceilings were removed and co-payments set at either 0% (children under 6, people who lost working capacity, and unemployed); 5% (poor people, veterans, and people received social allowance) and 20% (the remainder). In Stage V, the 5% co-payment was removed for poor people and veterans, so all fully-subsidized people had no co-payments. Otherwise, a co-payment ceiling was re-introduced for members with 5 years of continuous membership.

To receive the maximum level reimbursement, each member was required to first attend their allocated "primary health care facility" before referral to higher technical level facilities (e.g. provincial level hospital) across all Stages, except the commune level from Stage IV and district level in Stage V [69] (see Appendix 1).

5.3. Contribution of social health insurance to health expenditure

Over time, SHI has become an important source of health expenditure for treatment and prevention in Vietnam (Fig. 3), increasing from 5% in Stage I (1993) to 13% in Stage II (1998), 15% in Stage III (2005), 33% in Stage IV (2009), and 48% in Stage V (2016). Meanwhile, out-of-pocket payments (OOPs) as defined by MoH declined from 65% (1998) to 57% (2012) of total health expenditure, while OOPs as defined by the World Bank increased from 37% to 45% between 2001 and 2016. Hospital fees fluctuated around 15% of health expenditure for treatment and prevention during 1997–2016, with a peak of 26% in 2004.

5.4. Financial performance of social health insurance in 2006–2016

5.4.1. Total net expenditure, and expenditures for inpatient and outpatient care

SHI was in surplus all years, except for each year of Stage III and 2016, Stage V (see Fig. 4a). Notably, the revenue in 2010 was approximately double that in 2009, while expenditure increased by 35%, SHI transitioning from Stage III to Stage IV from October 2009. During the last year of Stage IV (2014), and first year of Stage V (2015), SHI gave rise to substantial surpluses, of VND 15,000 Billion. However, in 2016, SHI again returned to deficit, but less marked at, VND 1000 Billion.

Expenditure on inpatient services exceeded that for outpatient services in all years, except for 2001 and was highest in 1993 (the first year for which we have SHI data), when inpatient services accounted for 65% of SHI

← **Fig. 1.** Five stages of social health insurance evolution, and system characteristics. DRG: Diagnosis Related Group; FFS: Fee for Service; GoV: Government of Vietnam; MoH: Ministry of Health; PPC: Provincial People's Committee; VSS: Vietnam Social Security Agency.
Sources: [20,37,39,44,51,53,55,66,111,112].

expenditure. The proportion of SHI expenditure on inpatient services otherwise fluctuated between 50% to approximately 60% (see Appendix 3).

5.4.2. Financial performance of compulsory and voluntary schemes during 2006–2016

In Stage III (i.e., 2006–2008) and in 2009 (the transition year between Stage III and Stage IV), both compulsory and voluntary schemes were in deficit. From 2010, the first full-year of Stage IV, net expenditure of the compulsory scheme reduced markedly leading to a surplus of VND 9 trillion in 2012, while net expenditure for the voluntary scheme increased steadily from VND 2 trillion (in 2010) to around VND 6 trillion (in 2012) (Fig. 4a). Fig. 4b shows that average cost per SHI cardholder was always greater for the voluntary than compulsory schemes, particularly since 2010. From 2010, net expenditure per SHI cardholder for the compulsory scheme became negative (i.e., revenue positive at VND 200,000 per cardholder), while the average net expenditure per voluntary cardholder approached VND 1 million in 2012, which was nearly double the premium. A similar pattern to average cost per cardholder was observed for net expenditure per visit (Fig. 4c).

Fig. 4d indicates that the average service use for the compulsory scheme differed slightly from that for the voluntary scheme for both outpatient and inpatient services from 2006 to 2009. However, from 2010, the average number of outpatient and inpatient services increased for voluntary scheme members. This increase was most marked for outpatient services, which increased 2.75-fold (from 1.63 to 4.47 visits per annum per cardholder). Voluntary scheme cardholders thus gave rise to around triple the number of outpatient visits and double the number of inpatient visits on average, as compared with the compulsory scheme cardholders during 2010–2012. In Stage V, the average inpatient services and outpatient services per card for all members within the Scheme, given the transition to a compulsory scheme only, did not change markedly compared to Stage IV.

6. Discussion

During the period 1992–2016, the SHI system in Vietnam evolved through five dynamic stages of expanded coverage, increased pooling of risk, and inclusion of financial protections, primarily for the vulnerable. Coverage increased from 5% of the population in 1993 to 71% in 2014, and to 81% in 2016. The number of funds at the provincial level reduced from 61 in Stage I to a single pool in Stage II. Vulnerable groups (comprising the poor and near-poor, children under 6, older people, and people with lost work capacity) became compulsorily enrolled, and fully- or partially-subsidized; and by Stage V, had no co-payments for services provided under SHI, except from the near-poor with 5% co-payment. Benefits initially comprised core services and treatments, and any prescribed drugs. However, an essential drugs list was introduced in Stage II, and expanded in each subsequent stage. Other benefits were introduced from Stage III to Stage V. Most were retained, including transportation for vulnerable groups (Stage III), coverage of sexually transmitted diseases (Stage IV), and treatment of persons self-harming or injured in illegal activity (Stage V). The major exception was bypassing for outpatient care that was introduced in Stage IV, and then eliminated in Stage V. The contribution of SHI expenditure to health expenditure for treatment and prevention increased eight-fold over the study period. In addition to subsidization, financial protection was strongest for members in Stage I (with full payment) and at its weakest in Stage III (with 20% co-payments and no co-payment ceiling, with voluntary members also facing more limited re-imbursement compared with compulsory members). From Stage IV, increased protection has been facilitated through co-payment reductions and/or ceilings. Currently, there are efforts to automate processes by implementing an electronic payment system. Electronic systems will support monitoring capabilities, including the performance of health facilities, provider behavior and consumption of drugs enabling audit capabilities, improvements in efficiency and support assessments of service utilization across provinces.

6.1. SHI has facilitated progress towards UHC

There has been evidence that SHI has facilitated progress towards UHC. First, SHI has expanded from a restricted program covering people whose premiums could be obtained from the existing payments infrastructure to a “compulsory” scheme covering over four-fifths of the total population in 2016 (Fig. 2). This level of coverage exceeded the 2020 target of 80% of the total population set in 2012 [52]. We also noted that the voluntary scheme was in effect used as a stepping stone towards compulsory enrolment, with the use of open enrolment and community rating of premiums, as expected in a SHI scheme [14]. Such an approach could be considered for

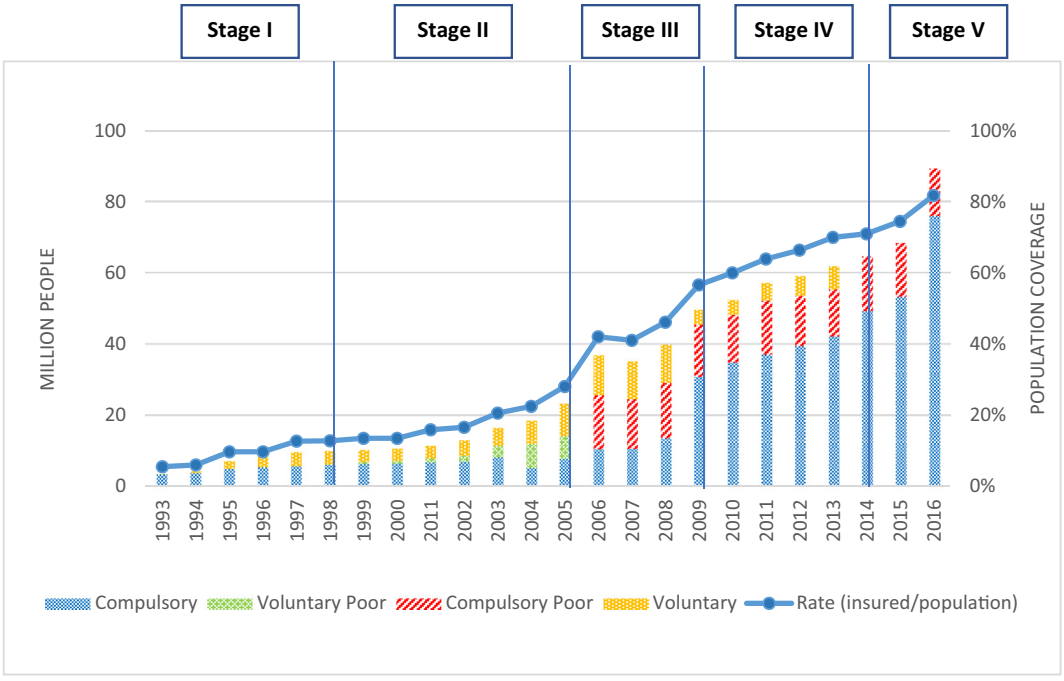

Fig. 2. Social health insurance coverage of the Vietnamese population, 1993–2016, by SHI scheme: numbers of people covered and rate of coverage. Sources: [32,83,110.

other countries looking to implement SHI but unable to establish universal coverage in the first instance. Second, SHI has enabled Vietnam to extend financial protection to vulnerable groups through full- or partial-subsidization of premiums, and no requirement for co-payments for fully-subsidized members introduced over Stages IV and V. Third, the unification of 61 provincial funding pools in Stage II resulted in a single risk pool that, while not necessary for UHC, increased the prospects of UHC by facilitating cross-subsidization [10] and improving the viability and sustainability of the financing mechanism. The importance of the single pool was reflected in the net expenditure data, with SHI in deficit in each year of Stage III, becoming in surplus in Stage IV and remaining so until mid-Stage V. There was also evidence of significant cross-subsidization between compulsory and voluntary schemes in Stage IV when both were operational. However, while co-payments were removed for all fully-subsidized members by Stage V and a ceiling on co-payments re-introduced for the long-term insured, the contribution of OOPs to total health expenditure has been increasing since 2011 (mid-Stage IV) based on WB data. Further, as the percentage of expenditure on hospital fees was constant over this period, these findings indicate that OOPs were increasingly for non-hospital related costs of care. We note that OOPs as assessed by the MoH have decreased over the study period as compared with the increase for the WB, reflecting the importance of the definition of OOP employed.

6.1.1. Financial performance and protection

Through the assessment of financial performance during the transition from Stage III to Stage IV, we observed evidence of the importance of premiums to financial sustainability, 'adverse selection', cross-subsidization, and the potential impact of co-payments.

To ensure financial sustainability, revenue must be sufficient to cover expenditure and thus generate a reserve [10]. We observed that SHI was in deficit during Stage III, and this arguably led to the premium increases observed in Stage IV, with the fund then remaining in surplus until 2016. In 2016, the SHI fund gave rise to a deficit even through service utilization decreased, the impact thus attributed to the increase in health service list prices in 2015 [57]. The VSS has requested a further premium increase [71], and on the basis of these findings, this claim might be vindicated. However, further monitoring of trends in service utilization and expenditure is recommended to inform any adjustments, given the accumulated surplus available to the VSS.

In Stage IV, when enrolment in the voluntary scheme was opened to all Vietnamese, adverse selection became evident with the marked increase in the average outpatient visits per cardholder (assuming those who demanded care, needed care). Adverse selection is expected within a voluntary scheme [10], but from the perspective of UHC we argue this should be viewed as a positive outcome, as it enables those who need care, to access ongoing funding for health care – "leave no one behind" [72].

Given this 'adverse selection' and a lower average premium for a voluntary cardholder, cross-subsidization of the voluntary scheme members by the compulsory scheme members is expected and was evident. This cross-subsidization is considered a positive outcome of the scheme, as the healthy subsidized the unwell as per UHC principles [10].

Between 2010 and 2012, expenditure per compulsory cardholder and their average service utilization remained stable. However, net expenditure per visit decreased slightly. We believe that this was a consequence of the re-introduction of co-payment ceilings in Stage IV. Given that co-payments are intended to reduce unnecessary service utilization [10,14], and given no clear reduction in service utilization, their appropriateness should be

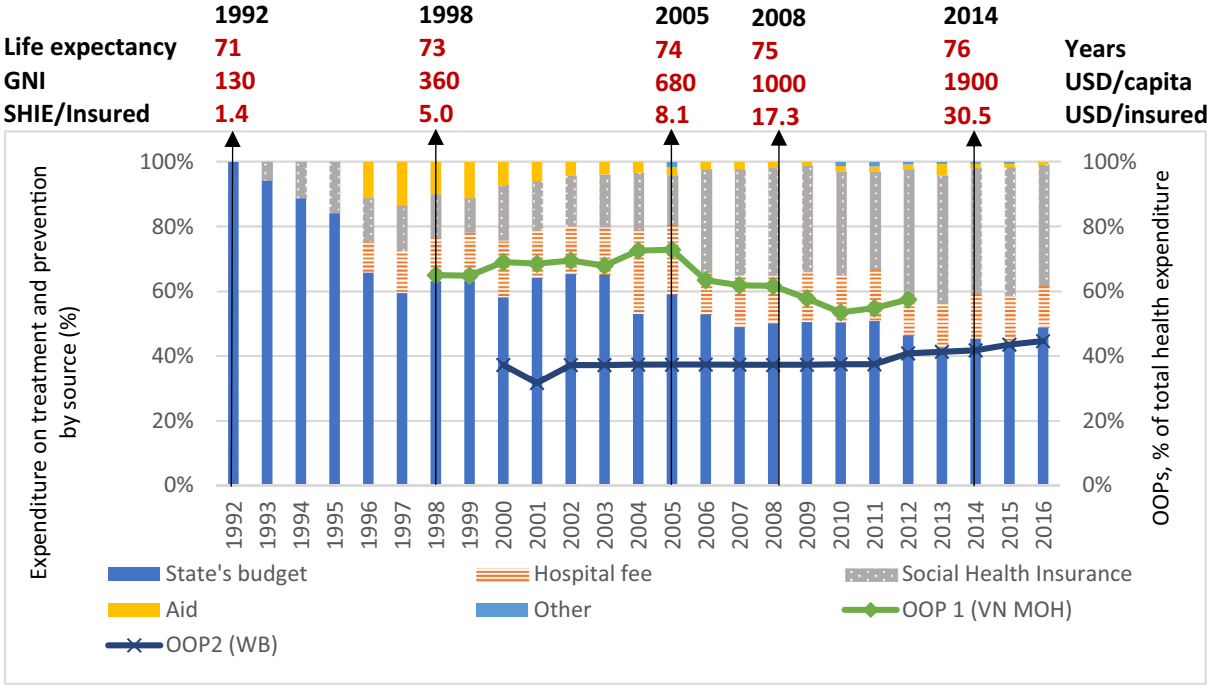

Fig. 3. Social health insurance as a component of health expenditure for treatment and prevention and out-of-pocket payment in Vietnam from 1992 to 2016. (Abbreviations: GNI: Gross National Income; MoH: Ministry of Health; OOP: Out-of-pocket payment; SHIE/Insured: Social Health Insurance expenditure per insured people; USD: United States Dollars; WB World Bank; VN: Vietnam.) OOP 1: Out-of-pocket payments as % of expenditure on total health expenditure. OOP defined by the Vietnam Ministry of Health: "Total household spending: user fees paid at public providers (including health insurance co-payment) + user fees paid at private providers + payment for health insurance premium (voluntary) + other payments (for drugs, consumables at pharmacies and etc.)" [35]. No data are available since 2012. OOP 2: Out-of-pocket expenditure (% of current health expenditure). Out-of-pocket payments defined as spending on health directly out-of-pocket by households. As reported by The World Bank (since 2000). Indicator code: SH.XPD.OOPC.CH.ZS [36]. http://data.worldbank.org/indicator/SH.XPD.OOPC.ZS?name_desc=true
Sources: [32,35,36,108,109].

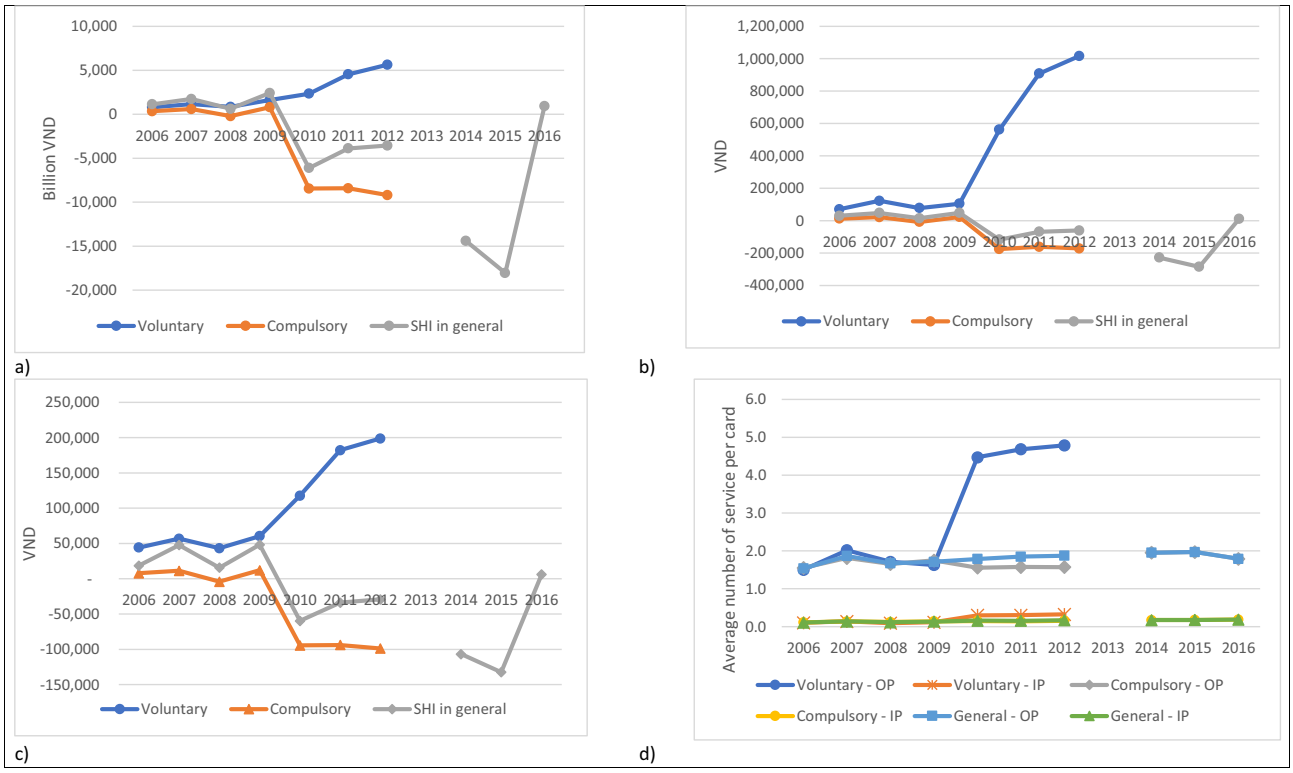

Fig. 4. Financial performance by scheme 2006–2016 a) net expenditure (VND) b) average net expenditure per cardholder (VND) c) average net expenditure per occasion of service (VND) d) average service utilization by type of service.
Sources: [32,83,110].

questioned. Are they leading to unnecessary financial burden on members who need care? Some studies have suggested that for some vulnerable groups including people living with a disability and poor people living in rural areas, financial hardship has been experienced even though they were insured [73,74]. Given that these studies were undertaken before introduction of zero co-payments for fully-subsidized members, these concerns may no longer be so acute.

6.1.2. Mechanisms that have supported increased coverage

subsidization was associated with the most significant increases in coverage as reflected in the almost doubling of coverage with the inclusion of the poor and other vulnerable groups in Stage III, and the more than doubling of the general compulsory scheme in Stage IV with the inclusion of children under 6 and the near-poor. However, it must be acknowledged that this achievement required a significant financial commitment from Vietnam relative to other Asian countries and regions that have successfully achieved UHC through SHI. For example, the levels of full-subsidization for the poor comprised 15% of Vietnam's total population as compared with 2% in Taiwan [75] and 3% in South Korea [76]. Furthermore, loans through the World Bank and Asian Development Bank were required to support subsidization of the near-poor [77–79].

6.2. Ongoing challenges on the path towards universal health coverage in Vietnam

Compared to other countries who were at similar levels of socioeconomic status when they commenced on the pathway to achieve UHC, Vietnam is taking longer, than Thailand at 27 years [80] and South Korea at 12 years [31]. Furthermore, Vietnam is facing several challenges ahead, as follows.

6.2.1. Facilitating enrolment for the uninsured

As of 2016, nearly 20% of the total population were not covered by SHI, even though SHI had been regulated to be compulsory. The underlying problem is that enrolment still relies on a voluntary mechanism and the identity of people who are not enrolled is unknown. Non-enrolled individuals primarily work within the informal sector, a common issue for developing countries [13], and there is no connection between SHI and an individual's taxation number nor their national identity number. Thus, there is no efficient mechanism to identify the identity of the uninsured. In addition, it still remains possible for people from the informal sector to enrol only during periods of anticipated medical need [55]. To encourage continuous enrolment and minimise adverse selection, benefits to expensive services are restricted to those who have a minimum of 6-month enrolment, as introduced for the voluntary scheme in Stage II. Also, an annual co-payment ceiling was introduced for any cardholder with continuous enrolment for at least five years in Stage V. The effectiveness of these measures has not been assessed.

Potential solutions to periodic enrolment can be discerned from mechanisms employed in other countries. For example, in Singapore, Switzerland and Germany, each of which has achieved UHC through individual mandate, and penalties are employed against non-participation. In Germany, people who re-enrolled may be charged outstanding premiums with interest, while penalties are applied in Singapore and Switzerland [81]. Similar financial sanctions for non-enrolment have been announced in Vietnam [82], but have not been applied [83]. Another potential and recommended mechanism to facilitate enrolment is household enrolment [11]. Household enrolment is employed in Thailand [84], South Korea [76], Japan and China [11], each of which has achieved UHC, with household enrolment based around an existing member. This contrasts to the household enrolment mechanism introduced in Vietnam in Stage V [55], which is limited to

those who are not eligible to enrol in any other category. As previously mentioned, identification of those who are not currently enrolled is problematic, arguably making Vietnam's household enrolment mechanism less effective than it could otherwise be. Further, the lack of an electronic database of enrolees limits the ability to pursue those who dropout of enrolment, as it does to identify those who maintain enrolment and reach the co-payment ceiling, impairing its efficiency.

6.2.2. Generous benefit package

The SHI benefit package provided in Vietnam is generous compared to that provided in most other countries with similar GDP in the Asian region, at least regarding the drugs subsidized. For example, Vietnam's drugs list currently includes 1201 non-traditional medications while Bhutan's list has 429 [85], the Maldives has 394 [86], the Philippine's list has 627 [87], and the WHO's essential drugs list has 408, and all include vaccinations. Moreover, the Vietnam list includes expensive drugs (including erlotinib, gefinitib, sorafenib, tacrolimus and imatinib) which are not included in the WHO's list. A generous benefit package runs counter to the advice that a country should prioritise population coverage [9] and start with a small benefit package that all can access [88]. Also, Vietnam does not have specific criteria for including benefits in the SHI benefit package (e.g. cost-effectiveness analysis as recommended), but rather is determined on the basis of historical provision and general guidance under SHI Laws. In addition, each province will develop their own sub-list of approved services, which can lead to a gap between policy and practice and inequalities in service provision between provinces. Thus, we recommend that any future expansions to the benefit package be limited until UHC is achieved. We also recommend that economic evaluation, budget impact evidence, and equity be considered in relation to existing and future benefits in line with the World Bank guidelines [10,11], and WHO and MoH recommendations [5,89,90].

6.2.3. Institutional arrangements to support universal health coverage

The health insurance system in Vietnam is currently showing signs of dysfunction as reflected in the denial of payment of claims by the VSS for alternate view x-rays [91,92], sending letters to provincial health services demanding reduced claims against provincial funds [91,93,94] and tensions between the VSS and MoH within the press [95] and between VSS and providers [92,95–97]. The underlying issue is conflicts regarding organizational role and responsibilities [98–100]. The need for “a referee” to adjudicate disputes is evident. Such an approach is applied in South Korea [101,102] where a third agency separate to the providers and fund holder reviews claims, makes assessment of reimbursement, and undertakes assessment to revise and update the benefit package. We suggest that the introduction of an equivalent agency in Vietnam may assist the sustainability and functioning of the system. The World Bank has also recognised the problems in Vietnam SHI institutional arrangements and recommended reform [11].

6.2.4. Transition to a middle-income country

International aid has historically played an important role for many national health programs in Vietnam for the prevention and treatment of HIV/AIDS, tuberculosis and malaria. For example, international aid funded 19% of the total budget of the HIV/AIDS program during 2012–2015 [103], and made a major contribution to the tuberculosis prevention program, including all medications for drug-resistant tuberculosis in 2017 [104]. However, with the transition of Vietnam to a low-middle income country, there has been a reduction in international aid since 2008 [105], and an increase in funding that needs to be serviced, given the provision of funds through loans rather than grants [106]. This change has and will continue to lead to increased burden on the GoV's budget, and the need to further expand both the population and benefit coverage under SHI given, for example, only 40% of HIV/AIDS patients have SHI coverage in 2018 [107]. Other concerns include the sustainability of the SHI fund, inclusion of preventive clinics into the SHI payment system, and the challenge to retain the confidentiality of HIV/AIDS patients.

On the basis of these findings, other countries contemplating the introduction of SHI should consider prioritizing the introduction of a single pool from implementation; that population coverage should be prioritised over the benefit package and that a staggered approach to including population sub-groups may facilitate population coverage. Further, a household enrolment mechanism based on a member with coverage be considered. A voluntary scheme can also support coverage, but the evidence indicates that self-selection will occur. Further, it is essential to undertake ongoing budget impact assessments, as modifications to the Scheme can impact its overall sustainability. Institutional arrangements should be designed so that conflicts of interest are minimised. Further, that automation for enrolments and electronic claims systems be introduced as a priority to support transparency and policymaking, and the efficiency of the system.

6.3. Strengths and limitations of this research

This study has been the first to review the development of SHI in Vietnam from its commencement in 1992 as a financial mechanism towards achieving UHC and is based on formal written documents in the public domain, including laws, decrees, circulars and decisions of the GoV. Our assessment of the achievement of UHC has been limited, however, being focussed on a system level analysis. As such we could not consider performance at the provincial level, nor functioning and impacts at household or individual levels, including access to care and the extent of financial risk protection afforded by SHI at these levels. Such considerations will be the focus of our future studies on SHI in Vietnam.

7. Conclusions

There has been considerable progress towards universal SHI in Vietnam. However, coverage in the informal sector remains incomplete and the benefit package appears overly generous for a low-middle income country. It is crucial to the achievement of UHC that Vietnam prioritises population coverage over the size of the benefit package by employing a mechanism that can effectively target both formal and informal sectors. Also, the benefit package should be revised in the light of cost-effectiveness and other recommended considerations. Finally, the roles and responsibilities of purchasers, service providers and regulators should be clearly established to minimise conflicts of interest and ensure transparency.

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CRediT authorship contribution statement

Quynh Ngoc Le: Conceptualization, Methodology, Software, Validation, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Writing - review & editing, Visualization. **Leigh Blizzard:** Methodology, Software, Validation, Formal analysis, Data curation, Writing - review & editing, Visualization. **Lei Si:** Writing - review & editing. **Long Thanh Giang:** Validation, Investigation, Resources, Writing - review & editing. **Amanda L. Neil:** Conceptualization, Methodology, Software, Data curation, Writing - review & editing, Visualization.

Declaration of competing interest

QNL is an Officer, Department of Health Insurance, Ministry of Health, Vietnam on study leave. GTL has undertaken contractual work for the Ministry of Health, Vietnam.

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Consent for publication

All authors have approved the final version of the manuscript for submission.

Availability of data and material

Source data are available through the Ministry of Health and World Bank websites as cited. All data is presented in the manuscript.

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