Achieving universal health coverage in small island states: could importing health services provide a solution?

Mariyam Suzana, Helen Walls, Richard Smith, Johanna Hanefeld

ABSTRACT

Background Universal health coverage (UHC) is difficult to achieve in settings short of medicines, health workers and health facilities. These characteristics define the majority of the small island developing states (SIDS), where population size negates the benefits of economies of scale. One option to alleviate this constraint is to import health services, rather than focus on domestic production. This paper provides empirical analysis of the potential impact of this option.

Methods Analysis was based on publicly accessible data for 14 SIDS, covering health-related travel and health indicators for the period 2003–2013, together with an in-depth review of medical travel schemes for the two highest importing SIDS—the Maldives and Tuvalu.

Findings Medical travel from SIDS is accelerating. The SIDS studied generally lacked health infrastructure and technologies, and the majority of them had lower than the recommended number of physicians in a country, which limits their capacity for achieving UHC. Tuvalu and the Maldives were the highest importers of healthcare technologies, and notably have public schemes that facilitate medical travel and help lower the out-of-pocket expenditure on medical travel. Although different in approach, design and performance, the medical travel schemes in Tuvalu and the Maldives are both examples of measures used to increase access to health services that cannot feasibly be provided in SIDS.

Interpretation Our findings suggest that importing health services (through schemes to facilitate medical travel) is a potential mechanism to help achieve universal healthcare for SIDS but requires due diligence over cost, equity and quality control.

INTRODUCTION

Universal health coverage (UHC) refers to a healthcare system that provides coverage of quality healthcare and financial protection to all citizens of a country. It has become the globally accepted concept for advocating access to, and affordability of, healthcare and is recognised in the Sustainable Development Goals. For countries to achieve UHC, a set of prerequisites are needed, such as political will and stakeholder support for predominantly public sector funding. The WHO also proposes four essential attributes for achieving UHC: an efficient and well-run health system; an affordable and equitable system for financing; access to essential medicines and technologies; and a sufficiently trained and motivated health workforce. Shortages of medicines, health workers and health facilities are major impediments to...
moving towards UHC and are characteristics that typify most small island developing states (SIDS). Thirty-nine countries are defined as SIDS, characterised by their narrow economic base, high production costs, shortage of skilled labour and heavy dependence on trade and foreign aid. The majority of SIDS receive high levels of overseas development assistance, and bilateral and multilateral trade has been one strategy that SIDS have used to overcome domestic shortages. While there are benefits to trade, there is a clear need for caution when liberalising trade, including healthcare. Walls et al. highlight that trade negotiations themselves, and the ongoing management of trade agreements once signed, can become a burden on the governments of smaller and poorer states. Yet, there is a dearth of systematic cataloguing and analysis of trade policy initiatives and their impact on health systems, leaving an incomplete picture of their nature and effects. This is especially true when it comes to SIDS, and this is the gap that this paper seeks to fill through the comparative analysis of the experience of a large group of SIDS.

Cross-country comparison of health system performance, if undertaken appropriately, can provide a powerful method for identifying strengths and weaknesses of reforms relevant to similar settings. This paper presents a cross-country comparison focused on medical travel to understand the pattern of consumption of health services abroad by SIDS, mapping the linkages between the import of health services and the health indicators relevant to achieving UHC. On this basis, we analyse how import of services through public medical travel schemes affects access to quality health services and UHC for SIDS.

METHODS

Study design
Quantitative analysis was conducted on sets of longitudinal secondary data on health-related travel and health indicators covering the period 2003–2013. A review of policy documents was used to understand, where possible, the reasons for the observed trends and patterns identified by the quantitative analysis. The study covered all SIDS that are member states of the UN and that reported health-related travel data to the International Monetary Fund (IMF), which are presented in table 1.

We developed a framework for analysis based on the WHO building blocks framework (2007), reflecting the four core dimensions of UHC (table 2). Two health indicators per dimension were selected, based primarily on data availability. To understand the relationship between each dimension of UHC and the import of health services, each pair of indicators was then mapped onto the outcome variable ‘health-related travel expenditure (HRT)’, for the period 2003–2013.

Sources of data
Data for the study were obtained from three sources: the IMF, the World Bank (WB) and the WHO. Data addressing the main outcome variable, ‘Health-related travel expenditure $’ were obtained from the IMF databank online. From the annually published balance of payments (BOP) data by the IMF, the item ‘Health-related travel expenditures (personal) in current USD’ was acquired for the years 2003–2013 for all the SIDS that reported these data. In the BOP, the item is presented under ‘Current Account/Goods and Services/Services/Travel/Personal/Healthrelated’, Debit, US Dollars’ for expenditures. According to the BOP manual, the travel component covers the goods and services acquired from an economy by travellers during visits of less than 1 year in that economy. Four broad approaches are used by Member States to measure travel expenditure, and the table in online supplementary annex I summarises the sources and methodologies used by the selected SIDS to report health-related travel data to the IMF. The WB data bank provided country-level indicators for the years 2003–2013 on health expenditure public (as a proportion of total health expenditure (THE)) (2003–2013), and out-of-pocket expenditure (OOP) health expenditure (as a proportion of THE) (2003–2013), while statistics from WHO (2015) were used to obtain indicators on health infrastructures and health technologies, health personnel and service coverage indicators. The two highest importers having the steepest rises in per capita HRT during the study period were selected, and policy documents relating to these two countries by three international donor agencies (WHO, WB and IMF) were reviewed (table 3 summarises the documents reviewed for each country).

Data management and analysis
The unit of analysis is the country. HRT per capita was derived by dividing HRT by the total population for each year. Median, IQR and percentages were used to describe data. Bubble charts that can show the relation between three different sets of variables were used to map the linkages between health indicators and health-related travel. Where indicator data were available for a certain year(s), the HRT data in the bubble represent the same year(s) as the indicators on the x and y axes. In this analysis, the x and y axes present the related indicators, and the data points represent the location of the country with regard to the indicators on the axes. The size of the bubble represents the amount spent on medical travel against the backdrop of each system needed for UHC. For instance, countries...
scoring high on skilled birth Attendents (SBA) and antenatal care (ANC) indicators show a strong, efficient and well-run domestic health system, while the size of the bubble would be an implication of the deficiencies in that system.

Role of the funding source
The funding source did not have any involvement in the design, collection, analysis and interpretation of the data presented in the paper or in the decision to submit the paper for publication. However, the salary of the corresponding author was covered by the funding source. The corresponding author confirms that she had full access to all the data in the study and had final responsibility for the decision to submit for publication.

RESULTS
Fourteen of the 39 SIDS reported health-related travel data to the IMF. As shown in figure 1, a rising trend was observed in health-related travel expenses over the
10-year period across the 14 countries. Median expenditures across the countries rose 4.5 times between 2003 and 2013, from $0.68 to $3.11 million, while a few SIDS were found to have extremely high per capita expenditure (figure 2).

Although expenditure on health-related travel by the SIDS increased over time, it was not linear for any country. Notable fluctuations in medical travel were observed for many countries, particularly from 2009 to 2012, which may reflect issues of data quality or reporting. By 2013, Tuvalu, the Maldives and the Seychelles were observed to be the top importers of health services among the SIDS. While it is beyond the scope of this paper to explore the individual travel growth patterns of SIDS, we examined the relationship between health-related travel and health systems of these countries.

Table 4 indicates that all SIDS perform well on the service coverage indicators that were used to represent a well-running health system, except for Guinea Bissau, which had very low access to skilled birth attendance. In health financing, WPRO SIDS generally perform better than other regions with high public expenditure and very low OOP. Tuvalu had almost 100% of its health expenditures borne by the government. Health infrastructures and technologies range on average 1–10 hospitals per 100,000 populations and 0–13 CTs per one million populations respectively. Access to health workforce were lowest in Guinea Bissau (0.7 and 5.9) and Cape Verde (3.1 and 5.6), while it was highest in Bahamas (28.2 and 41.4).

Figures 3–6 show HRTs among SIDS mapped across the health systems indicators identified for UHC dimensions in our framework.

Mapped across the health service coverage indicators, all SIDS were seen to perform well on coverage. The Maldives and Tuvalu, represented by the largest two bubbles, are observed to perform better on service indicators than the lowest importers of health services (Comoros and Vanuatu). Outliers Guinea Bissau and Vanuatu, which had lower levels of service coverage compared with other SIDS, also experienced low levels of import of health services.

A more linear pattern was observed between the public health expenditure and OOP health expenditure. Two large bubbles (the Maldives and Bahamas) were found at high levels of OOP spending. The largest bubble representing Tuvalu had very high levels of public health spending and very low OOP spending. Among the lowest importers of health services, Vanuatu had a very low OOP and high public expenditure on health, while Comoros’s health financing indicators were very low on both indicators.

### Table 2 Indicators addressing key health system attributes for universal healthcare

| Systems required for UHC                              | Indicators                                                                 | Source                                      |
|--------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------|
| A strong, efficient, well-run health system             | Births attended by skilled health personnel (%) (2007–2014) Antenatal care coverage at least four visits (%) (2007–2014) | World health statistics, WHO 2015          |
| A system for financing health services                  | Health expenditure public (as a % of THE) (2003–2013) OOP health expenditure (as a % of THE) (2003–2013) | World Bank databank, 2016                   |
| Access to essential medicines and technologies         | Density of hospitals per 1000 population (2013) Density of CT units (CTs) per million population (2013) | World health statistics, WHO 2015          |
| A sufficient capacity of well-trained, motivated health workers | Number of physicians per 100000 population (2007–2013) Number of nursing and midwifery personnel per 100000 population (2007–2013) | World health statistics, WHO 2015          |

OOP, out-of-pocket expenditure; THE, total health expenditure; UHC, universal health coverage.

### Table 3 Sources of data for qualitative analysis

| Region | Selected country | Policy documents analysed | Country reviews by WHO and WB |
|--------|------------------|---------------------------|-------------------------------|
| WPRO   | Tuvalu           | Tuvalu Strategic Health plan 2009–2018,27 Medical treatment scheme guideline, NHA | WHO: country cooperation strategy brief (May 2014),33 Statement of the IMF Mission36 |
| SEAR   | Maldives         | NHA 2011,34 Health master plan 2016–2025 | WB: Maldives Health Policy Note (March 2013)35 WHO: country cooperation strategy brief 2013–201736 |

IMF, International Monetary Fund; WB, World Bank.
Health-related travel mapped across the health workforce indicators showed that the largest bubbles were located at higher levels of nursing and midwifery personnel and around 10–15 physicians per 1000 population. The Bahamas and the Marshall Islands had very contrasting levels of health workforce but experienced
Table 4  Performance of SIDS across systems required for UHC

| SIDS by WHO regions | Indicators | A strong, efficient, well-run health system | A system for financing health services | Access to essential medicines and technologies | A sufficient capacity of well-trained, motivated health workers |
|---------------------|------------|------------------------------------------|--------------------------------------|-----------------------------------------------|---------------------------------------------------------------|
|                     |            | births attended by skilled health personnel* (%) | antenatal care coverage at least one visit* (%) | health expenditure public (as a % of THE)‡ | OOP health expenditure (as a % of THE)‡ | density of hospitals per 100 000 population* | density of CT units per million population* | number of physicians per 10 000 population* | number of nursing and midwifery personnel per 10 000 population* |
|                     |            | 2007–2014 | 2007–2014 | 2003–2013 | 2003–2013 | 2003–2013 | 2013 | 2013 | 2007–2013 | 2007–2013 |
| WPRO*(regional average) | 96 | 95 | 63.5 | 63.5 | 2.8 | 3.4 | 15.5 | 26.2 |
| Fiji                | 99 | 98 | 73.6 | 17.08 | 2.8 | 3.4 | 4.3 | 22.4 |
| Marshall Islands    | 90 | 92 | 84.25 | 11.84 | 3.8 | 19 | 4.4 | 17.4 |
| Tonga               | 96 | 99 | 82.21 | 11.78 | 3.8 | 0 | 5.6 | 38.8 |
| Tuvalu              | 93 | 93 | 99.9 | 0.1 | 10.1 | 10.9 | 58.2 |
| Vanuatu             | 89 | 76 | 82.86 | 10.92 | 2.4 | 0 | 1.2 | 17 |
| PAHO*(regional average) | 96 | 96 | 49.0 | 63.5 | 2.8 | 3.4 | 21.5 | 44.9 |
| Bahamas             | 99 | 86 | 46.12 | 28.38 | 1.1 | 13.2 | 28.2 | 41.4 |
| Belize              | 95 | 96 | 62.63 | 27.75 | 2.1 | 12.1 | 8.3 | 19.6 |
| Barbados            | 99 | 93 | 64.48 | 28.7 | 1.1 | 7 | 12.4 |
| AFRO*(regional average) | 51 | 77 | 50.8 | 0.8 | 0.4 | 2.7 | 12.4 |
| Cape Verde          | 99 | 91 | 74.92 | 23.15 | 1 | 2 | 3.1 | 5.6 |
| Comoros             | 82 | 92 | 44.78 | 45.84 | 0.7 | 1.4 | 1.4 |
| Guinea-Bissau       | 43 | 93 | 22.7 | 43.89 | 56.4 | 0 | 0.7 | 5.9 |
| Sao Tome and Principe | 81 | 98 | 36.58 | 49.5 | 0.7 | 1.4 | 1.4 |
| Seychelles          | 99 | 91 | 91.87 | 5.77 | 1.1 | 10.8 | 10.7 | 48.1 |
| SEAR*(regional average) | 68 | 77 | 37.9 | 6.7 | 5.8 | 14.2 | 50.4 |
| Maldives            | 99 | 99 | 59.42 | 31.48 | 6.7 | 5.8 | 14.2 | 50.4 |

Continued
7

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Table 4  Continued

| SIDS by WHO regions | Indicators | A strong, efficient, well-run health system | A system for financing health services | Access to essential medicines and technologies | A sufficient capacity of well-trained, motivated health workers |
|---------------------|------------|------------------------------------------|--------------------------------------|-----------------------------------------------|---------------------------------------------------------------|
|                     | Births attended by skilled health personnel* (%) | Antenatal care coverage at least one visit* (%) | Health expenditure public (as a % of THE)† | OOP health expenditure (as a % of THE)† | Density of hospitals per 100,000 population* | Density of CT units per million population* | Number of physicians per 10000 population* | Number of nursing and midwifery personnel per 10000 population* |
|                     | 2007–2014 | 2007–2014 | 2003–2013 | 2003–2013 | 2013 | 2013 | 2007–2013 | 2007–2013 |

*WHO (2016).32
†WB (2016).30
‡Calculated from national statistics as WHO figure was 0.0.

AFRO, regional office for Africa; OOP, out-of-pocket expenditure; PAHO, Pan American Health Organisation; SIDS, small island developing states; THE, total health expenditure; UHC, universal health coverage; WPRO, regional office for the Western Pacific.

Based on analysis of 14 SIDS, there appears to be a gradual but inclining trend of medical travel. Analysis of medical travel among SIDS is growing, although at a slower pace than originally projected, with specific regional and heterogeneous patterns. The analysis presented herein is the first of medical travel among SIDS, and findings confirm this heterogeneous pattern. Analysis and findings are presented here, and that is true of medical travel among SIDS.

**Discussion**

Based on analysis of 14 SIDS, there appears to be a gradual but inclining trend of medical travel. Analysis of medical travel among SIDS is growing, although at a slower pace than originally projected, with specific regional and heterogeneous patterns. The analysis presented herein is the first of medical travel among SIDS, and findings confirm this heterogeneous pattern. Analysis and findings are presented here, and that is true of medical travel among SIDS.

- Maldives compared with Tuvalu and the Maldives, which experienced the most significant growth in medical travel, had a more comprehensive set of services to a greater number of patients and a smaller per capita health budget. However, travel is a burden of OOP and it covers the full cost of travel episode and offers services of foreign specialists through the scheme.

**Table 5** provides a description of medical travel schemes in the two SIDS, Tuvalu and the Maldives, which were less than 20 units per 1 million population. These two SIDS faced health infrastructures and technologies that may reflect the small populations these countries serve. Both large and small bubbles were located where hospitals per 100,000 population were less than 10 and access to technologies was less than 20 units per 1 million population. These were however above the global medians of 1.1 hospital per 100,000 population and 3.8 units per 1 million population.

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**Table 10** provides a description of medical travel schemes in the two SIDS, Tuvalu and the Maldives, which were less than 20 units per 1 million population. These two SIDS faced health infrastructures and technologies that may reflect the small populations these countries serve. Both large and small bubbles were located where hospitals per 100,000 population were less than 10 and access to technologies was less than 20 units per 1 million population. These were however above the global medians of 1.1 hospital per 100,000 population and 3.8 units per 1 million population.
of data from 140 economies in the travel and tourism competitiveness report of 2011 indicates that the industry has witnessed contractions since 2009 due to the global economic crisis, volatile oil prices, climatic disturbances, multiple security incidents and pandemics.\(^{16}\) may explain the non-linear growth of medical travel across SIDS.

The SIDS analysed here generally lacked health infrastructure and technologies that will affect their capacity to achieve UHC. However, this is not inherent in all SIDS. Countries such as Belize ($0.1 million), Barbados ($2.4 million), Cape Verde ($0.01 million), Tonga ($0.006 million) and Tuvalu ($0.004 million) have
innovatively earned an income from health-related travel as well. According to the BOP manual, income covers two types of transactions between residents and non-residents; compensation of employees paid to non-resident workers and investment income receipts and payments on external financial assets and liabilities. Reports of income generated directly by medical tourism in SIDS is very rare except for few cases such as by the island state of Penang in Malaysia, which contributes more than 50% of the country’s medical tourism market with seven of its hospitals actively involved in medical tourism. The growth of medical tourism in Barbados serving the Caribbean, Mexican and the British patients have also been highlighted, although monetary benefits have not been mentioned. These bidirectional flows of trade in health services deserve greater investigation to understand better the factors that allow SIDS to act as exporters of services.
Table 5 Description of public schemes for medical travel in Tuvalu and Maldives

| Tuvalu model | Maldives model |
|--------------|----------------|
| **Is there a national policy to fund medical travel overseas?** | Tuvalu Medical Treatment Scheme (TMTS): medical referral scheme with Fiji introduced in 2005 and partner of medical treatment scheme with New Zealand. | ‘Husnuva Aasandha’: universal healthcare programme in the Maldives that subsidises for overseas treatment, introduced in 2012. |
| **How the programme works:** | | |
| **Approach** | Multilateral: government-to-government programme. Other countries participating in the medical treatment scheme with New Zealand are Fiji, Kiribati, Tonga and Vanuatu | Bilateral: government-to-foreign provider programme. Participating countries are the Maldives, India and Sri Lanka. The Aasandha office is established in Sri Lanka to serve Maldivians seeking treatment in Sri Lanka under the government subsidy. |
| **Goal** | Provide access to specialist care not available for citizens in Fiji, Kiribati, Tonga, Vanuatu and Tuvalu. Also provides a visiting medical specialist programme. | Provide access to services unavailable in the Maldives. |
| **Management of the scheme** | Each country maintains an in-country overseas referral committee (ORC) that manages the scheme, handling all aspects of the referral until the patient arrives overseas. | The scheme is implemented by an insurance company, Aasandha Private Ltd at a contracted price of 2750 Maldivian Rufiyah (MRF) per person for the first year (2012) |
| **Financing** | Participating countries make annual contributions for the scheme through bilateral discussions. | Paid directly to the contracted providers through the Maldivian government general revenues on a fee for service basis. |
| **Purchasing** | Health specialists/providers are under contract with New Zealand’s International Aid & Development Agency Specialist teams from New Zealand are sent to partner countries of the scheme. | Through contracted hospitals in India and Sri Lanka on a fee-for-service basis. Contracts are annually renewed. Scheduled visits by mobile teams of specialists are done on a regular basis. |
| **Eligibility (clinical/non-clinical)** | Referrals are made based on appropriate specialist advice and supported by the participating country’s ORC. There is good prognosis for the patient living and improved quality of life for at least 5 years after treatment according to clinical evidence and advice. | Overseas referrals are prescribed by a public sector physician. |
| **Exclusions** | Chronic cardiac failure, chronic renal failure, chronic lung conditions, chronic neurological conditions and conditions requiring heart, renal or bone marrow transplants are excluded. Patients who have significant medical conditions other than that for which they are being referred (eg, coexisting renal disease) and/or conditions that will incur ongoing costs that are unable to be met by partner government health funds. | Offers a comprehensive package with few exclusions such as cosmetic surgeries, dental, nutritional supplements, treatments for addictions, counselling, weight loss, abortions, infertility and complimentary medicines. |
| **Expenses covered** | Treatment cost, food, accommodation, small allowance and travel expenses. | Treatment costs, tickets for patient and one caregiver. |
| **Coverage statistics** | In 2013 TMTS spent $A 2.1 million, which is 44.5% of the health budget, where 99 patients (approximately 0.9% of the population) were subsidised by the government. | In 2013, Aasandha spent US$ 4.8 million on 3456 visits (approximately 0.9% of the population) that were subsidised for medical travel. |
| **Tradeoffs** | Sacrifices half the health budget that could be used for other health services such as primary healthcare. | High out-of-pocket expenditure on medical travel by patients who choose to self-fund their treatments. |

The three largest ‘bubbles’, representing high levels of per capita medical travel spending, by Tuvalu ($156.9), the Maldives ($113.2) and the Seychelles ($100.8) had public funds available for medical travel, which implies that medical travel is facilitated by the availability of government subsidy. The Tuvalu Medical Treatment
of overutilisation of services due to the perception that the current scheme is ‘unlimited’, which has resulted in inefficient use of resources especially in the absence of a gate-keeping system. The IMF in its latest country report of Tuvalu noted the potential overspending of the TMTS programme and advised the authorities to improve the cost-effectiveness of its policy. The strategic health plan of Tuvalu 2009–2018 further noted that the TMTS put a significant drain on public resources threatening its ability to maintain other health services in the country. Hence, maintaining a balance in the ratio of expenditure on preventive and curative healthcare is vital if import of health services is implemented as a solution to achieve UHC.

This study relies on international indicators that have limitations in methodology and application in different countries. A review of literature that used indicators as a measurement of health system performance showed that there were differences in the adoption of indicators by developing and developed countries and the composition of SIDS in this study included high-income, upper-middle-income, low-and-middle-income and low-income countries, which may limit the generalisability of study findings. We address the issue of data in online supplementary annex 1, which details data sources used by the SIDS to report to the IMF. Data on the volume of travel may have given better insight on trends in medical travel. The IMF member states have also used combination of methods to report travel data, which may result in underestimation or over-estimation of travel data in these countries. However, this study has used panel data of travel expenditures of 10 years and, where possible, panel data of indicators too, to minimise such overestimations and underestimations reflected in 1 or 2 years of data.

CONCLUSION

The trend in health-related travel among SIDS has over the last 10 years followed the global trend—rising yet heterogeneous. The pattern also demonstrated a volatility to global events, a factor that needs to be taken into consideration by SIDS considering import as a mechanism to increase access to health services.

SIDS generally lacked the health technologies needed to achieve UHC. The two island states with the highest per capita expenditures on the import of health services had publicly funded schemes to manage the process. Assessment of the Tuvaluan and Maldivian public schemes to subsidise medical travel have demonstrated that access to specialised, technology-driven health services can be increased through import of health services. Our findings suggest that import of health services is a potential mechanism to help achieve UHC but highlight the need for due diligence over cost, equity and quality control.

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