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分担研究報告書

Health care financing in low- and middle- income countries

研究分担者　ミジャヌール・ラハマン　東京大学大学院医学系研究科 国際保健政策学教室 特任助教
野村周平　東京大学大学院医学系研究科 国際保健政策学教室 助教
研究代表者　渋谷健司　東京大学大学院医学系研究科 国際保健政策学教室　教授
研究協力者　坂元晴香　東京大学大学院医学系研究科 国際保健政策学教室 特任研究員

研究要旨

Background: Attainment of universal health coverage is a global health priority. The Myanmar Government has committed to attainment of universal health coverage by 2030, but progress so far has not been assessed. We aimed to estimate national and subnational health service coverage and financial risk protection.

Methods: We used nationally representative data from the Myanmar Demographic and Health Survey (2016) and the Integrated Household Living Condition Assessment (2010) to examine 26 health service indicators and explored the incidence of catastrophic health payment and impoverishment caused by out-of-pocket payments. We used logistic regression models of inequalities in, and risk factors for, indicators of universal health coverage.

Findings: Nationally, the coverage of health service indicators ranged from 18·4% (95% CI 14·9–21·9) to 96·2% (95·9–96·5). Coverage of most health services indicators was below the universal health coverage target of 80%. 14·6% (95% CI 13·9–15·3) of households that used health services faced catastrophic health-care payments. 2·0% (95% CI 1·7–2·3) of non-poor households became poor because of out-of-pocket payments for health. Health service coverage and financial risk protection varied substantially by region. Although the richest quintiles had better access to health services than the poorest quintiles, they also had a higher incidence of financial catastrophe as a result of payments for health care. Of the indicators included in the study, coverage of adequate sanitation, no indoor use of solid fuels, at least four antenatal care visits, postnatal care for mothers, skilled birth attendance, and institutional

delivery were the most inequitable by wealth quintile.

Interpretation: Attainment of universal health coverage in Myanmar in the immediate future will be very challenging as a result of the low health service coverage, high financial risk, and inequalities in access to care. Health service coverage and financial risk protection for vulnerable, disadvantaged populations should be prioritised.

A．研究目的

Universal health coverage (UHC) is a global health priority, and a core element of the Sustainable Development Goals (SDGs) adopted by the UN in September, 2015.Goal 3 sets an ambitious agenda to “ensure healthy lives and promote wellbeing for all at all ages”. The aim of UHC is to ensure that all people can access good-quality health services without incurring financial hardship. WHO and the World Bank's target for UHC is at least 80% coverage of essential health services and 100% coverage of financial protection in the whole population. To measure progress towards UHC, WHO developed a framework that consists of three dimensions: essential health service coverage, financial risk protection, and population coverage (equity).

Like many WHO member countries, the Myanmar Government has committed to achieving UHC by 2030. The Ministry of Health and Sports launched the 5-year National Health Plan (2017–21) in December, 2016. The major goals are to ensure access to a basic essential package of health services (EPHS) for the whole population by 2020, and to increase financial risk protection. The Myanmar health system is a pluralistic mix of public and private systems in terms of both financing and service provision. After the transition to a civilian government in March, 2011, investments in the health sector have increased. The Myanmar Government increased the budget allocation for health to 3·4% of total government expenditure in the 2014–15 fiscal year, a substantial improvement from the 1% allocated in 2010–11. However, this allocation remains the lowest in the Asia-Pacific region. External funding, mostly in the form of official development assistance channelled through governmental and not-for-profit organizations, is also a source of finance. Official development assistance funded 21·8% of total expenditure on health as of 2014. Public spending on health has increased from 0·2% of the gross domestic product (GDP) in 2009, to 1% in 2014. However, despite this substantial increase in health investment, public spending on health in Myanmar is lower than that in all other countries of the Association of Southeast Asian Nations. Because of an absence of health insurance and cost-sharing policies, out-of-pocket payments are the main source of health financing in Myanmar. Alongside increases in health-sector investment, out-of-pocket health expenditure as a proportion of total health expenditure decreased from 79% in 2011, to 51% in 2014. However, the proportion of health expenditure that out-of-pocket payments comprise in Myanmar is still one of the highest in the region.

Other key challenges in Myanmar's health system include the insufficient health workforce, limitations in decentralization of health services, and a lack of infrastructure. The health worker density in 2016 was 15 per 10 000 population, 61% lower than the southeast Asian regional estimate. Despite the introduction of

health-sector decentralization, financial and human resources are still centrally managed. Only 0·6 hospital beds are available per 1000 population, the second lowest availability in the southeast Asian region. Additionally, inequality in access to health services and financial risk protection as a result of geographical, ethnic, and socioeconomic differences is a major concern in Myanmar.

The path to UHC differs between all countries on the basis of variations in demographic and socioeconomic characteristics. Thus, measurement of progress is both necessary and informative. This study provides a baseline measurement of UHC in Myanmar both nationally and subnationally, against which subsequent measurements can be compared to monitor progress. In view of the current situation, understanding of progress towards UHC at a subnational level assessment is very important for identification of states or regions that are failing to meet targets for health service coverage and financial risk protection.

B．研究方法

Data sources

We used data from two nationally representative surveys to assess progress towards UHC in Myanmar. To assess indicators of health service coverage, we used the 2015–16 Demographic and Health Survey. The survey had a stratified two-stage sample design. Data from the survey consisted of 13 260 households from 4000 primary sampling units collected nationally, for urban and rural areas, and for each of the seven states and eight regions of Myanmar. The overall response rate was 98%. Details of sampling methods and questionnaires were described in the Myanmar Demographic and Health Survey report. Data from the Integrated Household Living Condition Assessment 2009–2010 were used for estimation of indicators of financial risk protection associated with out-of-pocket health-care payments. The survey had a stratified multistage design, and provided data for key dimensions of living conditions and wellbeing. The survey was done in two rounds 6 months apart between December, 2009, and May, 2010. In our study, we used data from both rounds. 18 660 households were selected, and the overall response rate was 99%. The Integrated Household Living Condition Assessment was based on data from household questionnaires, which provide information about household living conditions that is needed for assessments of financial risk. Details of the study design can be found in the Integrated Household Living Condition Assessment report.

Indicators

In accordance with WHO and World Bank recommendations, health service coverage, financial risk protection, and inequalities for UHC indicators were measured. We included both prevention and treatment indicators in the assessment of health services, in line with WHO recommendations. The 22 prevention indicators that were considered for inclusion were

improved water; adequate sanitation; no indoor use of solid fuels; family planning needs satisfied; at least one antenatal care visit; at least four antenatal care visits; BCG immunisation; three doses of diphtheria, tetanus, and pertussis (DTP3) immunisation; three doses of polio immunisation; measles immunisation; full immunisation; vitamin A supplementation; care seeking for pneumonia; care seeking for fever; care seeking for diarrhoea; exclusive breastfeeding; postnatal care for mothers; postnatal care for neonates; no use of tobacco among women; non-overweight or obese; use of insecticide-treated bednets by children younger than 5 years; and use of insecticide-treated bednets by pregnant women. The four treatment indicators considered for inclusion were skilled birth attendance, oral rehydration therapy for childhood diarrhoea, institutional delivery, and acute respiratory infection treatment for childhood pneumonia. Two indicators—incidence of catastrophic health payments and impoverishment—were used to assess financial hardship dimensions in the UHC framework. A household's expenditure on health care was defined as catastrophic if it exceeded some proportion of total household expenditure, non-food expenditure, or capacity to pay. Consistent with the methods of a previous study, we used a threshold of 40% of non-food expenditure. Health expenditure was judged to be impoverishing when a non-poor household became poor after out-of-pocket payment for health-service utilisation. We estimated impoverishment on the basis of the national food poverty line directly from the Integrated Household Living Condition Assessment survey.

Statistical analysis

Similar to previous studies, we estimated mean prevention, mean treatment coverage, and composite coverage indices. The composite prevention index was based on all prevention indicators and the composite treatment index was based on the four treatment indicators. For the composite coverage index, we used a weighted mean of eight interventions (family planning needs satisfied, skilled birth attendance, antenatal care with skilled provider, DTP3, measles immunisation, BCG immunisation, oral rehydration therapy for children with diarrhoea, and care seeking for pneumonia) from four specialties (family planning, maternity care, child immunisation, and case management). They were calculated by random-effects meta-analyses. Coverage of indicators was estimated as a proportion, taking into account the sampling weight. Consistent with the methods used in a previous study, we assessed both the absolute and relative measures of inequality with the slope index of inequality, relative index of inequality, and concentration index to summarise wealth-quintile-specific inequalities in indicators of health service coverage and financial risk protection. At a national level, we measured both absolute and relative inequality in health. However, for subnational assessments of inequality, we used the slope index of inequality,

which provided the magnitude of inequality. We used a logistic regression model to compute these indices, taking into consideration the whole population distribution of wealth. We used a series of multilevel logistic regression models to identify potential risk factors for selected indicators of health service coverage and financial hardship. In the risk-factor analysis, we selected six indicators with the greatest inequalities in indicators of health service coverage (as shown by the highest slope indices of equality). The key confounding factors adjusted for in the model were the age, sex, and education level of the head of the household, household size, households with chronic illness, and residence (urban or rural). Because of their effects on health, we included socioeconomic and demographic characteristics as confounding factors in our multilevel analysis. All analyses were performed in Stata (version 14.1).

Role of the funding source

The study funders had no role in study design; data collection, analysis, or interpretation; or writing of the report. The corresponding author had full access to all study data and had final responsibility for the decision to submit for publication.

C．研究結果

National coverage of most prevention and treatment indicators was roughly 50–80% (table 1). The composite coverage index was 71·2% (95% CI 69·9–72·5), the composite prevention index was 58·7% (47·9–69·1), and the composite treatment index was 49·2% (34·3–64·2; table 1). The lowest national coverage indicators were for use of insecticide-treated bednets by both pregnant women and children younger than 5 years, followed by postnatal care for neonates and institutional delivery (table 1). Non-use of tobacco by women, BCG immunisation, and improved water sources had the highest coverage (table 1).

Coverage of indicators varied by state and region (figure 1). National coverage of adequate sanitation was 59·4% (95% CI 58·5–60·3; table 1), which ranged from 34·4% (95% CI 30·9–38·0) in Rakhine to 92·8% (95% CI 90·1–95·4) in Kachin (figure 1A). Coverage of institutional delivery was low across all states and regions (figure 1A, table 1). Coverage of immunisation varied substantially: although nationally the BCG coverage target of 80% was reached, in Shan (76%) and Ayeyarwaddy (75%) it was not (figure 1B). Full immunisation coverage reached the 80% target in Mandalay and Kayah only (figure 1B).

At the national level, 14·6% (95% CI 13·9–15·3) of households incurred catastrophic health payments (table 2), and 2·0% (1·7–2·3) of non-poor households became poor as a result of health-care costs. The overall incidence of catastrophic health care payment was highest in Chin (24·5% [95% CI 17·2–31·9]), followed by Kayin (20·6% [12·9–28·2]) and Taninthayi (20·4% [16·9–23·9]; table 2). Wealthier people

faced more financial catastrophe than poorer people in all states and regions except for Chin and Kayin (figure 2). Substantial inequality in the frequency of catastrophic payment was evident in Yangon, Ayeyarwaddy, and Chin, where the incidences of catastrophic payment among the wealthiest households was 18·5 (95% CI 7·5–29·5) percentage points higher, 17·6 (9·6–25·7) percentage points higher, and 16·3 (2·0–30·6) percentage points higher, respectively than those in the poorest households (figure 2, table 2). By contrast, in Kayin, the incidence of catastrophic health payments was 14·6 (95% CI –28·8 to –0·3) percentage points lower among the richest households than the poorest households.

The most inequitable prevention and treatment indicators were adequate sanitation, no indoor use of solid fuel, at least four antenatal care visits, postnatal care for mothers, presence of a skilled birth attendant during delivery, and institutional delivery (table 3). Notable differences in inequality of coverage for skilled birth attendance, institutional delivery, adequate sanitation, and full immunisation were noted across all states and regions (appendix pp 14–15).

Multilevel models showed that access to perinatal care services increased with increased levels of education (either mothers or their partners) and older age (appendix p 16). Women with some higher education were five times more likely to have at least four antenatal care visits, and seven times more likely to have an institutional delivery than were those with no education (appendix p 16). Women with a partner with higher education were at least five times more likely to have access to perinatal services than were those whose partners did not have any education (appendix p 16). Irrespective of sex, households headed by someone with higher education were nearly twice as likely to have access to adequate sanitation facilities and not to use solid fuels indoors as those headed by someone with no education (appendix p 17).

In terms of financial risk, households containing a person with a chronic illness were 5·95 times more likely, households containing a person or older than 65 years were 1·79 times more likely, and those headed by women were 1·23 times more likely to incur catastrophic health payments than their counterparts (table 4). The risk of impoverishment was 3·44 times higher among households containing a person with a chronic illness than among those without a person with a chronic illness (table 4). Risk of impoverishment was roughly 1·5 times higher for female-headed households than for male-headed households and for households headed by someone with higher education than for those headed by someone with no education (table 4).

Discussion

To our knowledge, this study is the first attempt to assess systematically progress towards UHC in Myanmar both nationally and subnationally, as measured with a wide range of indicators of health service coverage and financial risk

protection. Our findings suggest that overall coverage of essential health services is far from the 80% target by 2030. Coverage varied widely across states and regions. Many households faced catastrophic and impoverishing health expenditure. Furthermore, we noted substantial wealth-based inequality in both coverage of health services and catastrophic health payments across all states and regions.

In our study, coverage of most health service indicators was lower than 60%, both nationally and subnationally (table 1). These findings are similar to those from countries such as Afghanistan, Bangladesh, Nepal, and India. There are many barriers to access to health services, which are mainly the result of poor availability of good-quality health services, large distances to health facilities, and long waiting times at overcrowded facilities with restricted opening hours. The most important barrier in many Asia Pacific countries, including Myanmar, is high user fees and direct out-of-pocket payment for health services, which is especially likely to deter poor populations from attempting to access care. Another obvious reason for poor service coverage in Myanmar is low investment in health care. Only 3% of the total government budget is allocated to health care, and allocations between regions and states are not proportionate to health needs. Civil conflicts and the remoteness of some regions also contribute to poor coverage.

The lowest coverage noted was for maternal, neonatal, and child health indicators, such as postnatal care for neonates and institutional delivery. Low coverage of maternal, neonatal, and child health indicators has also been reported in India, Afghanistan, and Bangladesh. A previous study suggested that the shortage of human resources in the health sector, especially in hard-to-reach or remote areas, was strongly linked to slow progress towards increased coverage of maternal, neonatal, and child health indicators in Myanmar. Maternal and child health promoters (community volunteers in rural areas who are part of community initiatives to provide a connection between mothers and health-care providers) and auxiliary midwives in Myanmar probably cannot adequately address poor access to maternal, neonatal, and child health services, especially in remote areas. Furthermore, financial constraints and transportation difficulties are common barriers to accessing delivery care in health-care facilities. The Ministry of Health and Sports introduced the Maternal and Child Health Voucher Scheme, a financial incentive for the use of maternal and child health services, in 2013. However, motivation to use the voucher is low, especially among pregnant women living in remote areas and those living far from health facilities. Similarly, in Bangladesh, use of maternal health services remains low despite the introduction of a cash benefits system in the form of a maternal health voucher scheme because of the insufficient availability of health facilities. Our findings suggest that a maternal, neonatal, and child health coverage gap still exists, and 80%

coverage is unlikely to be reached by 2030 without focused efforts to expand services and increase coverage.

BCG immunization was the only immunization coverage indicator that reached the 80% target nationally—a finding that policy makers should be aware of. Only two states and regions (Mandalay and Kayah) achieved 80% coverage in all vaccinations. No vaccinations had more than 80% coverage in Ayeyarwaddy or Shan (figure 2). The Expanded Program on Immunization in Myanmar is supported by WHO, UNICEF, and Gavi, the Vaccine Alliance. According to Myanmar's Gavi co-financing status, and because of the country's transition from low-income to lower-middle-income status, the immunisation programme should in theory be 100% domestically financed in the very near future. Fully self-financing an immunisation programme is likely to be a challenge for the Ministry of Health and Sports, mainly because current budget allocations to the health sector are not sufficient to cover all vaccination services. Furthermore, there is also no separate financing mechanism for the health sector apart from official development assistance and the government budget allocation to the health sector. Barriers associated with low immunisation uptake should be identified, so that appropriate interventions can be implemented to increase coverage.

Availability of health services was greatest among the wealthiest quintile in this study, consistent with findings from Bangladesh, India, Nepal, Pakistan, and many other low-income and middle-income countries. The most substantial inequalities between the richest and poorest quintiles were in coverage of at least four antenatal care visits, postnatal care for mothers, institutional delivery, skilled birth attendance, adequate sanitation, and no indoor use of solid fuel. The coverage of some health indicators such as at least four antenatal care visits, skilled birth attendance, and institutional delivery was substantially higher in urban than in rural populations. This wide inequality exists despite the introduction of trained community health workers and auxiliary midwife programmes in 2010, which were intended to fill the gap in primary care services, especially in 1444 hard to-reach or remote areas. Barriers to the effective implementation of these programmes include heavy workloads, geographical and transportation barriers, inadequate supervision and training, and inadequate replenishment of auxiliary midwife kits. Despite efforts to increase the health workforce, the attrition rate is as high as 15–20% for community health workers and 5–10% for auxiliary midwives. The reasons for low retention of the health workforce, especially in remote areas, need to be assessed and addressed effectively. In addition to inadequate and inequitable distribution of the health workforce, a study of baseline health system assessments in hard-to-reach villages showed that lack of infrastructure, essential medicines, medical equipment, and insufficient financing restricted the delivery of primary

health-care services. Policies to support, fund, and provide technical supervision to these programmes need to be strengthened to achieve desired outcomes.

Along with wealth-based inequality, our study also showed that socioeconomic characteristics such as secondary or higher education and living in urban areas were associated with increased coverage of health services. Subnational analysis of indicators of health service coverage showed that coverage was notably low in Rakhine, Chin, and Shan, which are remote, conflicted regions whose populations comprise mostly ethnic groups. Disparities in health and health care will persist unless Myanmar addresses the lack of access to health services in vulnerable populations. For example, Rohingya populations in Rakhine cannot access proper nutrition, obstetric care, or maternal and child health care. In Chile, gender, ethnic, and age-related inequality in access to care, and the adequacy and quality of care all remain to be addressed even after the introduction of the Explicit Health Guarantees Regime (known as AUGE). AUGE covers health conditions for free through both the public and private systems. Turkey has successfully increased equity in health-service use and financing through the Health Transformation Program, which has raised access to, and use of, key health services for all citizens but especially the poorest populations. Thus, a strong commitment to scaling up health coverage in remote areas, areas with ethnic populations, and regions of conflict, while ensuring that services are accessibly by the most marginalised and poorest populations, should be a priority for national policy and decision making in Myanmar.

Roughly 15% of households in Myanmar incurred financial catastrophe, and 2% of non-poor households were impoverished as a result of out-of-pocket health payments. Households in the richest quintiles were more likely to incur catastrophic health expenditure than those in the poorest quintiles. These findings are consistent with those in other south Asian countries, such as Bangladesh, Nepal, and India. A possible explanation for the lower frequency of catastrophic payment among poor populations might be that poor households refrain from seeking health care because of their limited ability to pay. Decisions to seek care are likely to involve a tradeoff with income needed for daily expenditure for such households. Furthermore, wealthy households are more likely to use both outpatient and inpatient services than poor households, and thus are more likely to face catastrophic health expenditure when paying for the services they have used. Additionally, our multilevel analysis showed that households with members older than 65 years or members with chronic illnesses were more likely to experience financial catastrophe or impoverishment as a result of health expenditure. Studies in India and China showed that financing chronic diseases contributed to high out-of-pocket payments, and pushed households into poverty.

The absence of prepayment or health insurance

systems, high dependency on out-of-pocket payments, and low spending on health (as a proportion of gross domestic product) contribute to financial catastrophe and impoverishment in low-income and lower-middleincome countries. All these factors need to be urgently addressed in Myanmar. In Mexico between 2000 and 2010, a national protection programme known as Seguro Popular, which is financed through general taxation, reduced the incidence of catastrophic health expenditure from 3·1% to 2·0%, and of impoverishment because of health expenditure from 3·3% to 0·8%. Furthermore, the introduction of health insurance mechanisms, such as government-funded insurance schemes in China, social health insurance financed by income tax in Thailand and Vietnam, and voluntary insurance schemes such as micro health insurance in Pakistan, can protect against catastrophic health payments. Policy makers need to develop appropriate risk-pooling mechanisms for health insurance to protect households from financial risk from health payments, with an emphasis on improving access to health services among poor households. Health service coverage and incidence of financial catastrophe varied across states and regions in our study. Kachin, Kayin, Chin, Rakhine, and Ayeyarwaddy, which are in the north and northwest of Myanmar, generally had less than 50% coverage in essential health services indicators such as skilled birth attendance, institutional delivery, and at least four antenatal care visits. The incidence of financial catastrophe was highest in Chin, followed by Kayin, Taninthayi, and Ayeyarwaddy (table 2). An absence of accessible health facilities, insufficient health workforce, and insufficient health budget allocation were the major causes of this regional inequity. Efforts should be made to prioritise the provision of cost-effective health services on the basis of states' specific needs. States and regions in Myanmar have very few autonomous source of revenue, and very little individual accountability. However, decentralisation in Myanmar began with the adoption of the 2008 Constitution. The fiscal decentralisation process has been in progress since the transition to a civilian government in 2011. Thus, although primary responsibility would remain with the central government, subnational governments choosing to prioritise the expansion of health services and to raise revenues in the form of taxes could be a way to address inequality. A strength of our study was that we used a wide range of metrics to estimate the coverage of prevention and treatment indicators. Ours is the first study in which national and subnational progress towards UHC was assessed on the basis of all three dimensions of the UHC framework. We used nationally representative surveys with high response rates as our data source, and did sensitivity analysis to assess the association between inequality in health indicators and exposure variables. However, our study has some limitations. First, indicators related to services for non-communicable diseases and two

major communicable diseases (HIV and tuberculosis) were not included. The burden of non-communicable diseases is increasing in Myanmar, and the burden of communicable diseases— especially tuberculosis and HIV—remains substantial, but very few data are available. Second, we did not take into account transportation costs to receive health services, and other opportunity costs. As a result, the incidence of catastrophic payment might be higher than our results suggest. Finally, the data for indicators of health service coverage and those for indicators of financial risk protection were not from the same year and thus could not be compared.

D. 結論

Attainment of UHC in Myanmar in the immediate future will be very challenging in view of low coverage of health services, high financial risk because of out-ofpocket payments, and large inequalities. There is a need to prioritise health service coverage and financial risk protection for poor populations in Myanmar. Our estimates of components of UHC indicators could help to guide health policy makers with important decisions and strategy planning to achieve these goals.

E. 研究発表

1. 論文発表

Han SM, Rahman MM, Rahman SM, Swe KT, Palmer M et al. **Progress towards universal health coverage in Myanmar: a national and subnational assessment**. *Lancet Glob Health*, 2018, 6(9): e989-e997

2. 学会発表

特になし

F. 知的財産権の出願・登録状況

（予定を含む。）

1. 特許取得

特になし

2. 実用新案登録

特になし

3. その他

特になし

Table 1. Coverage of health services nationally and in urban and rural areas in Myanmar, 2016

	National (95% CI)	Urban (95% CI)	Rural (95% CI)
Prevention indicators			
Improved water sources	80·3% (79·6–81·0)	89·3% (88·2–90·3)	77·1% (76·2–77·9)
Adequate sanitation	59·4% (58·5–60·3)	76·9% (75·4–78·3)	51·6% (50·6–52·6)
No indoor use of solid fuels	51·2% (50·3–52·1)	76·3% (74·8–77·7)	48·9% (47·8–49·9)
Family planning needs satisfied	75·9% (74·8–77·1)	81·9% (79·9–83·8)	73·7% (72·3–75·1)
At least one antenatal care visit	80·1% (78·8–81·4)	93·7% (92·1–95·4)	75·9% (74·3–77·5)
At least four antenatal care visits	55·5% (53·8–57·1)	83·1% (80·5–85·6)	47·0% (45·2–48·9)
BCG immunisation	87·8% (85·6–90·0)	91·8% (88·2–95·5)	86·4% (83·7–89·1)
DTP3 immunisation	62·7% (59·4–65·9)	75·2% (69·5–81·0)	58·3% (54·4–62·1)
Three doses of polio immunisation	67·2% (64·1–70·4)	76·0% (70·4–81·7)	64·2% (60·4–67·9)
Measles immunisation	77·1% (74·2–79·9)	81·7% (76·5–86·8)	75·5% (72·1–78·8)
Full immunisation	55·2% (51·8–58·5)	67·5% (61·2–73·7)	50·9% (47·0–54·8)
Vitamin A supplementation	54·8% (53·2–56·4)	53·6% (50·2–57·0)	55·1% (53·3–56·9)
Care seeking for pneumonia	58·6% (50·0–67·1)	76·9% (60·3–93·5)	53·6% (43·8–63·4)
Care seeking for fever	57·0% (53·2–60·8)	59·8% (51·9–67·7)	56·2% (51·8–60·5)
Care seeking for diarrhoea	53·8% (49·0–58·5)	48·7% (37·3–60·1)	54·9% (49·6–60·1)
Exclusive breastfeeding	51·2% (46·3–56·2)	51·8% (41·8–61·7)	51·1% (45·4–56·8)
Postnatal care for mother	58·3% (55·9–60·6)	77·7% (73·7–81·7)	51·8% (49·0–54·5)
Postnatal care for neonate	27·6% (25·4–29·7)	32·0% (27·5–36·5)	26·1% (23·7–28·5)
Does not use tobacco	96·2% (95·9–96·5)	98·8% (98·5–99·1)	95·1% (94·7–95·6)
Not overweight or obese	75·3% (74·6–76·1)	66·9% (65·4–68·5)	78·8% (77·9–79·6)
Use of ITN (children <5 years old)	18·6% (17·5–19·7)	8·3% (6·6–10·0)	21·5% (20·2–22·9)
Use of ITN (pregnant women)	18·4% (14·9–21·9)	10·4% (4·5–16·4)	20·7% (16·5–24·9)
Treatment indicators			
Acute respiratory infection treatment for pneumonia	43·3% (34·8–51·9)	53·8% (34·2–73·5)	40·5% (30·9–50·1)
Oral rehydration therapy	55·8% (51·1–60·6)	62·5% (51·5–73·5)	54·4% (49·1–59·6)
Institutional delivery	37·1% (35·6–38·5)	70·1% (67·2–73·0)	27·6% (26·1–29·1)
Skilled birth attendance	60·2% (58·7–61·6)	87·8% (85·8–89·9)	52·3% (50·6–54·0)
Composite indices			
Composite coverage index	71·2% (69·9–72·5)	74·4% (68·7–80·1)	69·1% (62·9–75·2)
Composite prevention index	58·7% (47·9–69·1)	67·6% (53·5–80·2)	55·9% (45·7–65·9)
Composite treatment index	49·2% (34·3–64·2)	70·8% (54·9–84·5)	43·5% (27·4–60·4)

DTP3=three doses of diphtheria, tetanus, and pertussis immunisation. ITN=insecticide-treated net.

Table 1: **Coverage of health services nationally and in urban and rural areas in Myanmar, 2016**

Table 2. Incidence of catastrophic health-care payment and inequality nationally and sub-nationally in Myanmar, 2010

	Incidence of catastrophic health expenditure (95% CI)			Slope index of inequality (95% CI)
	Overall	Poorest quintile	Richest quintile	
National	14·6% (13·9 to 15·3)	11·0% (9·7 to 12·3)	21·5% (19·5 to 23·4)	12·3 (10·0 to 14·7)
Kachin	14·9% (11·6 to 18·3)	9·3% (0·8 to 17·8)	16·9% (10·4 to 23·3)	8·7 (–2·3 to 19·6)
Kayah	14·7% (8·3 to 2·1)	N/A	16·2% (0·8 to 31·6)	N/A*
Kayin	20·6% (12·9 to 28·2)	12·3% (3·0 to 38·7)	14·5% (3·8 to 6·8)	–14·6 (–28·8 to –0·3)
Chin	24·5% (17·2 to 31·9)	20·8% (3·9 to 12·7)	20·7% (2·3 to 39·1)	16·3 (2·0 to 30·6)
Sagaing	12·7% (10·6 to 14·7)	8·8% (5·1 to 12·5)	17·9% (12·8 to 23·0)	10·0 (3·9 to 16·0)
Taninthayi	20·4% (16·9 to 23·9)	17·0% (8·8 to 25·1)	26·5% (20·4 to 32·6)	11·1 (1·2 to 21·0)
Bago	16·1% (14·0 to 18·2)	11·1% (6·7 to 15·4)	26·4% (20·7 to 32·0)	16·2 (9·5 to 22·9)
Magway	13·7% (11·7 to 15·7)	9·7% (6·6 to 12·8)	27·9% (20·2 to 35·6)	16·1 (9·0 to 23·2)
Mandalay	9·9% (8·4 to 11·4)	6·8% (4·6 to 8·9)	13·3% (9·5 to 17·1)	7·3 (3·8 to 10·8)
Mon	16·4% (13·4 to 19·4)	16·3% (1·8 to 30·8)	20·3% (14·7 to 25·9)	12·9 (6·6 to 19·2)
Rakhine	13·2% (10·1 to 16·3)	11·9% (7·7 to 16·0)	31·4% (16·8 to 46·0)	7·7 (–1·2 to 16·7)
Yangon	17·2% (14·6 to 19·8)	18·3% (10·8 to 25·9)	24·3% (19·6 to 29·0)	18·5 (7·5 to 29·5)
Shan	8·0% (6·0 to 10·1)	4·0% (1·4 to 6·7)	16·9% (7·6 to 26·3)	12·1 (5·7 to 18·4)
Ayeyarwaddy	18·3% (16·3 to 20·2)	13·5% (10·5 to 16·4)	27·4% (18·5 to 36·2)	17·7 (9·6 to 25·7)

Catastrophic health expenditure was defined on the basis of a threshold of 40% of non-food expenditure. N/A=not applicable. *Could not estimate slope index of inequality because of the small sample size for catastrophic health expenditure.

Table 2: **Incidence of catastrophic health-care payment and inequality nationally and subnationally in Myanmar, 2010**

Table 3. Quintile-specific inequalities in access to health services in Myanmar, 2016

	Coverage (95% CI)		Slope index of inequality (95% CI)
	Poorest quintile	Richest quintile	
Prevention indicators			
Improved water sources	66·0% (64·2 to 67·9)	87·1% (85·7 to 88·4)	31·0 (24·2 to 37·9)
Adequate sanitation	27·7% (26·0 to 29·5)	89·3% (88·1 to 90·5)	67·8 (63·6 to 72·0)
No indoor use of solid fuels	31·6% (29·8 to 33·4)	86·6% (85·2 to 87·9)	61·1 (56·2 to 66·0)
Family planning needs satisfied	70·1% (67·4 to 72·9)	81·8% (79·5 to 84·1)	12·8 (7·1 to 18·5)
At least one antenatal care visit	66·7% (63·8 to 69·7)	97·3% (95·9 to 98·7)	38·4 (31·2 to 45·6)
At least four antenatal care visits	35·2% (32·2 to 38·2)	88·2% (85·6 to 90·9)	58·3 (51·4 to 65·1)
BCG immunisation	86·1% (81·7 to 90·5)	97·8% (95·5 to 100)	18·2 (7·9 to 28·5)
DTP3 immunisation	49·8% (43·5 to 56·2)	84·4% (78·4 to 90·4)	44·1 (32·0 to 56·1)
Three doses of polio immunisation	57·1% (50·8 to 63·4)	85·4% (79·6 to 91·2)	38·3 (25·9 to 50·6)
Measles immunisation	75·1% (69·6 to 80·6)	92·0% (87·5 to 96·4)	24·3 (11·8 to 36·8)
Full immunisation	41·9% (35·6 to 48·2)	77·1% (70·2 to 84·0)	45·5 (32·9 to 58·0)
Vitamin A supplementation	49·4% (46·5 to 52·4)	54·8% (50·5 to 59·1)	12·6 (0·3 to 22·0)
Care seeking for pneumonia	46·1% (31·9 to 60·2)	81·2% (56·9 to 100)	38·1 (11·5 to 64·8)
Care seeking for fever	46·5% (39·9 to 53·2)	75·3% (65·8 to 84·9)	30·5 (15·0 to 46·1)
Care seeking for diarrhoea	69·6% (41·5 to 57·7)	60·7% (45·9 to 75·4)	13·9 (–5·0 to 32·8)
Exclusive breastfeeding	52·2% (42·5 to 61·9)	61·8% (50·4 to 73·2)	13·2 (–6·6 to 33·1)
Postnatal care for mother	37·8% (33·2 to 42·3)	87·7% (83·8 to 91·7)	55·5 (46·8 to 64·1)
Postnatal care for neonate	20·2% (16·5 to 23·9)	33·4% (27·8 to 39·0)	18·5 (9·1 to 27·9)
Does not use tobacco	89·7% (88·5 to 91)	99·4% (99·1 to 99·7)	11·6 (0·9 to 14·1)
Not overweight or obese	85·5% (84·0 to 87·0)	65·5% (63·7 to 67·3)	–23·5(–27·3 to –19·8)
Use of ITN (children <5 years old)	23·8% (21·5 to 26·1)	10·1% (7·8 to 12·4)	–17·0 (–24·1 to –9·9)
Use of ITN (pregnant women)	20·7% (14·0 to 27·4)	8·5% (2·4 to 14·6)	–15·6 (–29·3 to –2·0)
Treatment indicators			
Acute respiratory infection treatment for pneumonia	38·0% (24·3 to 51·8)	53·0% (21·9 to 84·0)	12·6 (–18·5 to 43·6)
Oral rehydration therapy	54·4% (46·4 to 62·5)	66·4% (52·1 to 80·7)	8·2 (–11 to 28·1)
Institutional delivery	16·8% (14·7 to 18·8)	82·5% (79·5 to 85·5)	65·3 (58·9 to 71·7)
Skilled birth attendance	36·3% (33·7 to 39·0)	97·0% (95·6 to 98·4)	67·4 (61·5 to 73·4)
Composite indices			
Composite coverage index	57·9% (55·7 to 60·2)	84·5% (82·2 to 86·7)	33·1 (25·7 to 40·5)
Composite prevention index	49·0% (38·5 to 59·5)	60·7% (54·9 to 66·3)	29·1 (10·0 to 48·3)
Composite treatment index	35·5% (20·2 to 52·4)	53·4% (40·6 to 66·0)	46·0 (20·2 to 71·8)

DTP3=three doses of diphtheria, tetanus, and pertussis immunisation. ITN=insecticide-treated net.

Table 3: **Quintile-specific inequalities in access to health services in Myanmar, 2016**

Table 4. Multilevel logistic regression of financial risk indicators in Myanmar, 2010

	Catastrophic payment adjusted OR (95 %CI)	Impoverishment adjusted OR (95% CI)
Sex of head of household		
Male	1	1
Female	1·23 (1·10–1·37)	1·51 (0·50–4·56)
Age of head of household, years		
≤24	1	1
25–34	0·98 (0·54–1·78)	1·01 (0·34–4·00)
≥35	0·92 (0·52–1·63)	0·98 (0·76–1·28)
Education of head of household		
No education	1	1
Primary	0·87 (0·74–1·01)	1·16 (0·84–1·62)
Secondary	0·69 (0·59–0·81)	0·78 (0·37–1·65)
Higher	0·48 (0·38–0·61)	1·47 (1·14–1·89)
Household member older than 65 years		
No	1	1
Yes	1·79 (1·55–2·08)	0·96 (0·92–1·01)
Household member with chronic disease		
No	1	1
Yes	5·95 (5·21–6·79)	3·44 (2·64–4·49)
Number of household members	0·89 (0·87–0·92)	1·30 (0·97–1·75)
Wealth quintile		
1 (poorest)	1	N/A
2	1·27 (1·08–1·49)	N/A
3	1·58 (1·38–1·81)	N/A
4	1·91 (1·63–2·23)	N/A
5 (richest)	2·86 (2·42–3·38)	N/A
Place of residence		
Urban	1	1
Rural	0·96 (0·86–1·07)	1·04 (0·78–1·40)
Variance (covariance)		
Level 2 (cluster)	0·14 (0·04)	0·14 (0·14)
Level 3 (states)	0·24 (0·04)	0·06 (0·13)

ORs are adjusted for regions. OR=odds ratio. N/A=not applicable.

Table 4: **Multilevel logistic regression of financial risk indicators in Myanmar, 2010**

Figure 1. Essential health service coverage (A), and immunization coverage (B) in Myanmar, 2016

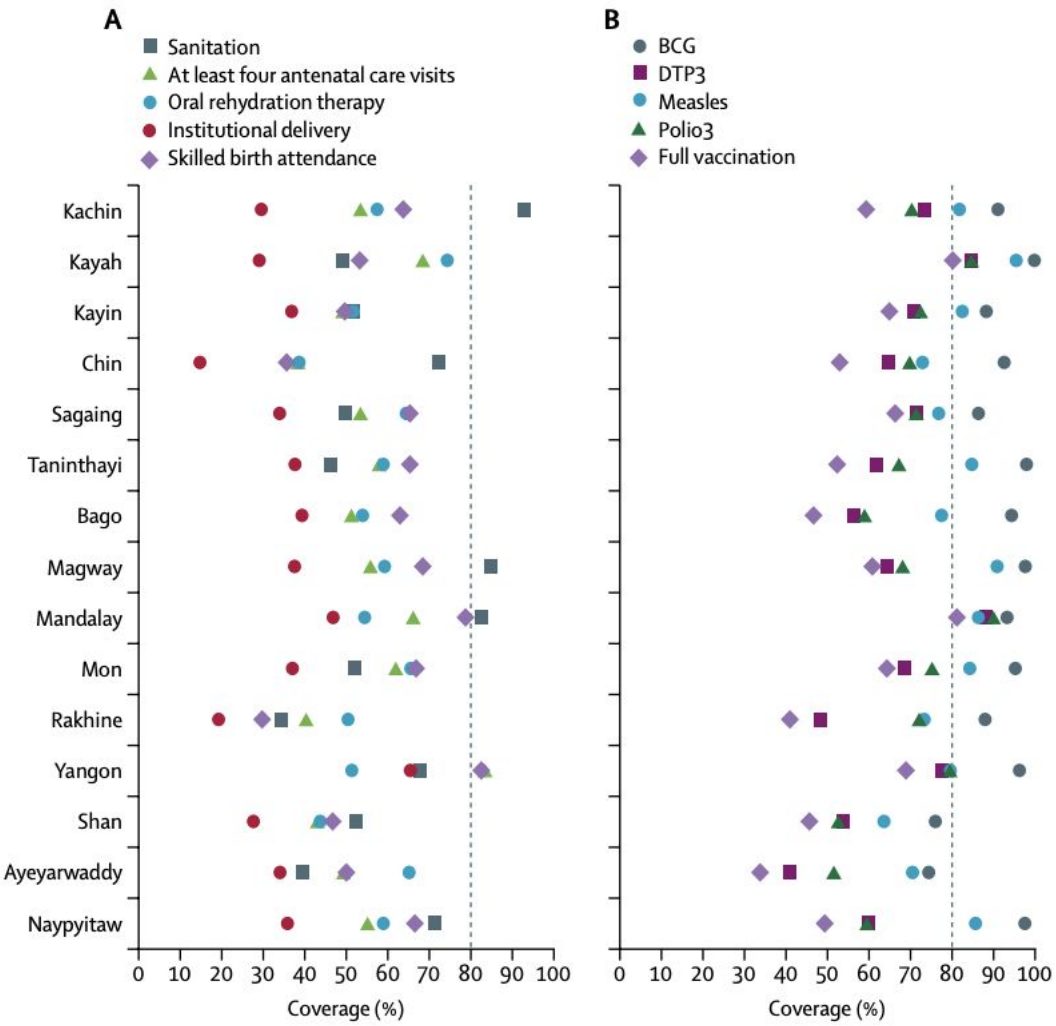

Figure 2. Quintile-specific incidence of catastrophic payments for health care in Myanmar, 2010