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# Universal Health Coverage and Older Persons in Mongolia: an investigation of rural-urban disparities in health service use

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## Relevance to the conference

Role of individual data on health of older persons in developing Asia

Importance of international partnership, standardized questions, and technical capacity training

### Mongolia-Australia-WHO international collaboration

School of Public Health, Mongolian National University of Medical Sciences (MNUMS), Ulaanbaatar, Mongolia	Australian Research Council Centre of Excellence in Population Ageing Research (CEPAR), Australia	World Health Organization, Geneva, Switzerland
Conceptualized, led data collection and collaboration in Mongolia	Conceptualized and funding Data analysis and write-up	Adapted questionnaire from WHO Study on global AGEing and adult health (SAGE)* – survey team trained by the WHO team
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\*WHO-SAGE data collected in China, India, Ghana, Russia, South Africa, and Mexico with a focus on those aged 50 years and older

# Context

Mongolia is a lower middle-income country of 3.2 million people. It is the second largest landlocked country in the world and one of the most sparsely populated.

Situated between the People's Republic of China and the Russian Federation, Mongolia has maintained its own culture.

Approximately half of the total Mongolian population lives in the country's only large city, Ulaanbaatar.

As a result of rapid urbanisation, economic and health inequalities exist not only between rural and urban areas but also within urban areas (traditional *ger/yurts* districts and *apartment* areas).



Source: <https://www.adb.org/news/adb-help-ulaanbaatar-transform-its-ger-areas-eco-districts>

## Selected indicators

Urban population (%) 2019	69
Population aged 60+ years (%) 2020	7
Population aged 60+ years (%) 2035	12
Life expectancy at birth, male (years) 2019	66
Life expectancy at birth, female (years) 2019	74
Causes of deaths (%), Global Burden of Diseases 2019	
Communicable and maternal and child-related conditions	11
Non-communicable diseases (NCDs)	82
Injuries	7

Mean life expectancy at birth has increased substantially but there are large disparities between males and females.

Chronic NCDs pose the most predominant health challenges, with very high rates of hypertension.

References – United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website. World Bank Open Data, World Development Indicators ([data.worldbank.org](https://data.worldbank.org)) Global Burden of Diseases 2019, data visualization ([vizhub.healthdata.org/gbd-compare](https://vizhub.healthdata.org/gbd-compare))

# Universal Health Coverage (UHC)

Mongolia has made significant progress towards UHC for over 90% of its population. UHC is funded by mixed general taxation and social insurance schemes.

Mongolia's UHC Index 63 out of 100 (compared to 55 in the region); however, out-of-pocket (OOP) expenditure is still relatively high as 32% of total health expenditure (2018).

Delivery of health services is challenged by very large sparsely populated areas.

There are significant disparities between urban and rural areas in terms of distribution of health facilities and human resources, which are more concentrated in urban centers.

Primary health care is delivered by Family Health Centers (FHC) in urban areas and by *Soum* Health Centers (SHC) in rural areas. Most tertiary and all specialised hospitals are located in Ulaanbaatar.

Public secondary and tertiary services can be accessed free of charge if referred from primary care providers. Bypassing to higher services without referrals results in OOP expenditure.

References – Erdenee et al. Distribution of health care resources in Mongolia using the Gini coefficient. *Hum Resour Health* 2017, 15(1):56. | Gan-Yadam et al. Factors associated with health service utilization in Ulaanbaatar, Mongolia: a population-based survey. *J Epidemiol* 2013, 23(5):320-328 | World Health Organization. World Health Statistics 2019: Monitoring Health for the Sustainable Development Goals. | WHO. 2013. Regional Office for the Western Pacific. Mongolia Health System Review. Manila: WHO Regional Office for the Western Pacific.

# Research objective

To investigate patterns and determinants of outpatient and inpatient health service use amongst older people in Mongolia with a focus on urban-rural area differences.

*Main variables of interest:*

- *For outpatient service use, questions included: “Over the last 12 months, did you receive any health care not including overnight stay in hospital or other healthcare facilities?”*
- *For inpatient health service use, questions included: “In the last 3 years, have you ever stayed overnight in a hospital or other healthcare facilities?”*

# Data collection and analytical approach

The research was approved by the Research Ethics Committee of the Mongolian National University of Medical Sciences (2017/3-08).

Led by the Mongolian team, the survey was implemented between late 2017 and early 2018.

Data were collected through 45-90 minutes face-to-face interviews using structured questionnaires and clinical assessments (same module as WHO-SAGE questionnaire).

Respondents selected from Ulaanbaatar as well as two rural provinces near the capital.

Final sample size was 975 people aged 60 years and older, with approximately half from urban and half from rural areas. The participation rate was over 95%, similarly high in other SAGE data (85% in India and 93% in China).

Unadjusted crude percentages were reported. Multivariate logistic regressions were used for analyses reporting adjusted Odds Ratios (AORs) and 95% Confidence Intervals (CIs).

Attributes		Residence % (n=975)		
		Rural areas (n=478)	Urban - <i>ger</i> (n=255)	Urban - <i>apartment</i> (n=242)
Sex	Male	44 (210)	35 (89)	33 (81)
	Female	56 (268)	65 (166)	66 (161)
Age group	60-69	63 (299)	69 (177)	47 (114)
	70-79	29 (137)	28 (71)	35 (85)
	80+	9 (42)	3 (7)	18 (43)
Marital status	Married/Cohabiting	64 (305)	52 (132)	54 (130)
	Not married*	5 (26)	3 (8)	3 (7)
	Widowed	31 (147)	45 (115)	43 (105)
Ethnicity	Mongol <sup>†</sup>	99 (475)	87 (221)	94 (228)
	Kazak‡	0.2 (1)	12 (30)	4 (9)
	Other	0.4 (2)	2 (4)	2 (5)
Religion	None	17 (82)	36 (91)	35 (86)
	Buddhist	81 (388)	58 (147)	61 (147)
	Other	1 (5)	7 (17)	3 (8)
Educational attainment	No formal education	5 (24)	2 (4)	2 (4)
	Primary school	34 (159)	7 (18)	5 (12)
	Secondary school	23 (107)	29 (74)	19 (46)
	High school	13 (59)	15 (39)	19 (47)
	Tertiary or higher	26 (121)	46 (116)	55 (133)
Economic tertiles	Tertile 1 (lowest)	42 (162)	29 (68)	25 (48)
	Tertile 2	40 (154)	29 (67)	22 (43)
	Tertile 3 (highest)	19 (73)	42 (96)	53 (102)

**Table 1 Demographic and socioeconomic characteristics**

Compared to rural residents, both urban - *ger* and urban - *apartment* residents had a greater predominance of

- females; widows
- higher education
- greater representation in the uppermost economic tertile

Within urban areas, there was a higher proportion of urban - *apartment* residents were aged 80 years+ and higher socioeconomic status.

	Residence (%)		
	Rural	Urban - <i>ger</i>	Urban - <i>apartment</i>
<b>Outpatient visits in the past year</b>			
Yes	53	48	66
No	47	52	33
<b>Type of outpatient facility</b>			
Public clinics, including health centres	55	69	70
Public hospitals	29	20	19
Private facilities	11	12	11
<b>Inpatient stays in the past 3 years</b>			
Yes	49	52	54
No	51	48	46
<b>Type of inpatient facility</b>			
Public hospitals	84	83	82
Private hospitals	11	15	17
<b>Reasons for health service use**</b>			
Acute or communicable conditions	5	4	5
Chronic joint pain / arthritis	16	11	16
Heart problems	12	15	12
Hypertension	32	30	32
Liver cirrhosis, liver cancer, other cancers	3	4	4
Diabetes	1	2	4
Other internal medicine†	5	6	6
Other‡	27	27	20
<b>Number of chronic conditions</b>			
0	25	13	9
1	33	32	28
2+	42	55	63

**Table 2 Health service use**

Across the three areas, outpatient service use was highest among urban - *apartment* area and most commonly in FHC and SHC.

About half reported needing inpatient care across the three areas.

The most common condition leading to health service use was hypertension.

Chronic conditions were higher in urban - *apartment* areas but could be due to older age.

\* either inpatient or outpatient; †includes stomach, pancreas, kidney, gynaecological, prostate, bladder, haematological and nutritional disorders; generalised visceral or muscular pain; ‡ includes surgery, injuries, regular check-ups, breathing problems, sleep disorders, fatigue, allergies, hearing, vision, dental, neuropathy. 9

	Residence % (n)		
	Rural	Urban - ger	Urban - apartment
<b>Outpatient service use</b>			
<b>Travel mode</b>			
Private vehicle	38 (86)	15 (17)	17 (25)
Public Transport	42 (96)	64 (71)	74 (109)
Taxi	5 (12)	12 (13)	6 (9)
Walk	15 (34)	9 (10)	3 (5)
<b>Travel time</b>			
<1 hour	82 (197)	94 (113)	91 (142)
≥1 hour	18 (43)	6 (7)	9 (14)
<b>Payment</b>			
Self or spouse	12 (27)	7 (8)	6 (9)
Son/daughter or other family	3 (7)	3 (4)	4 (6)
Insurance	10 (23)	1 (1)	1 (1)
Free	75 (169)	89 (108)	90 (145)
<b>Inpatient service use</b>			
<b>Travel mode</b>			
Private vehicle	54 (109)	40 (40)	43 (40)
Public Transport	6 (13)	22 (22)	15 (14)
Taxi	13 (27)	25 (25)	23 (21)
Walk	23 (46)	2 (2)	6 (6)
Ambulance	3 (6)	11 (11)	13 (12)
<b>Travel time</b>			
<1 hour	71 (143)	78 (76)	82 (75)
≥1 hour	28 (57)	22 (21)	19 (17)
<b>Payment</b>			
Self or spouse	23 (47)	12 (12)	15 (14)
Son/daughter or other family	5 (10)	7 (7)	9 (8)
Insurance	9 (19)	6 (6)	2 (2)
Free	63 (128)	75 (75)	74 (69)

**Table 3 Accessibility and payment for health services**

Travel time over an hour for outpatient and inpatient health service use was significantly higher in rural areas.

Urban residents accessed a statistically significant higher proportion of free outpatient and inpatient services than rural residents (both  $\chi^2$   $p < 0.001$ ).

Attributes	Adjusted Odds Ratios [95% Confidence Interval]		
	Outpatient use	Inpatient use	
Sex	Male	Reference	Reference
	Female	<b>1.88 [1.3; 2.6]</b>	<b>1.27 [0.9-1.8]</b>
Age group	60-69	Reference	Reference
	70-79	1.00 [0.6; 1.8]	0.86 [0.5; 1.5]
	80+	1.65 [0.6; 4.9]	0.73 [0.2; 2.1]
Marital status	Married/Cohabiting	Reference	Reference
	Not married/Divorced	1.4 [0.7; 3.1]	0.4 [0.2; 0.9]
	Widowed	0.9 [0.6; 1.3]	0.9 [0.6; 1.3]
Education	Primary school or below	Reference	Reference
	Secondary school	1.02 [0.7; 1.6]	1.18 [0.7; 1.8]
	High school	0.96 [0.6; 1.4]	1.32 [0.9; 1.9]
	Tertiary or higher	0.85 [0.5; 1.3]	0.9 [0.8; 1.7]
Economic tertile	Tertile 1 (lowest)	<b>0.63 [0.4; 0.9]</b>	<b>1.32 [0.9; 1.9]</b>
	Tertile 2	<b>0.73 [0.5; 1.1]</b>	<b>1.17 [0.8; 1.7]</b>
	Tertile 3 (highest)	Reference	Reference
Urban-rural areas	Rural area	0.81 [0.5; 1.2]	1.12 [0.7; 1.7]
	Urban area <i>ger</i>	<b>0.54 [0.4; 0.8]</b>	1.08 [0.7; 1.6]
	<i>apartment</i>	Reference	Reference
Chronic conditions	0	Reference	Reference
	1	<b>2.59 [1.7; 4.0]</b>	<b>1.97 [1.3; 3.1]</b>
	2+	<b>2.78 [1.8; 4.3]</b>	<b>3.01 [1.9; 4.6]</b>

**Table 4. Adjusted multivariate logistic regression on health service use**

Females were more likely to use outpatient and inpatient services than males.

Older persons in lower economic tertiles were less likely to use outpatient services but more likely to use inpatient services.

Compared to urban - *apartment* residents, urban - *ger* residents were much less likely to use outpatient services.

Chronic conditions were strong factors associated with both outpatient and inpatient service use.

	Payment (not free vs free – ref )
<b>Outpatient service use</b>	
Rural	<b>3.65 [1.8; 7.4]</b>
<i>Urban - ger</i>	0.98 [0.4; 2.2]
<i>Urban - apartment</i>	Reference
<b>Inpatient service use</b>	
Rural	1.46 [0.8; 2.8]
<i>Urban - ger</i>	0.98 [0.5; 1.9]
<i>Urban - apartment</i>	Reference

**Adjusted Odds Ratios for the same attributes as in Table 4 [95% Confidence Interval]**

**Out of pocket expenditure (OOP)** – rural residents were over three times more likely to pay for outpatient services compared to urban - *apartment* residents.

# Discussion of findings

Females were more likely than males to use outpatient and inpatient services.

- A plausible explanation is that men are more likely to have lower rates of awareness and hence delay accessing care, especially for less urgent chronic health conditions.
- This result was supported by a chronic disease risk factor surveillance study (STEPS) in Mongolia found that females aged 55-64 years had a higher prevalence of NCDs than men (42.6% vs 36.1%).

Increasing numbers of chronic conditions, especially with co-morbidities, were associated with both outpatient and inpatient health service use.

- Hypertension was the most common condition for health service use. A recent study in Ulaanbaatar has reported hypertension prevalence of 46.5% (using 130/80 mm Hg).
- Hypertension is significant risk factor for ischemic heart disease and hemorrhagic stroke.

## Discussion of findings (cont.)

Older persons in lower economic tertiles were less likely to use outpatient services (due to OOP) but more likely to use inpatient services.

Compared to urban *apartment* older residents, there is evidence of disparities in outpatient service use amongst rural and urban - *ger* areas.

- Low-income rural residents and rural-to-urban migrants living in the outskirts of urban areas (especially *ger* districts) have limited access to higher levels of health services.
- Higher income individuals tend to bypass FHCs in urban areas and self-refer to secondary/tertiary care.

Our data support previous findings from the Mongolian Household Socio-Economic Survey data 2007-2018 that free access to health services does not guarantee equitable access.

*“Reasons given for not seeking treatment in the 2018 survey include the facility was too far or could not afford travel highlighting the role of geographic challenges compounded by weak transport infrastructure.”*

# Cross-reference with other SAGE data

Advantage of standardized questions and possible international comparison.

Compared with other WHO-SAGE data, Mongolia had slightly lower use of outpatient service in the past year (55%) compared to 60% to 70% in PR China, Ghana, South Africa, the Russian Federation and 80% in India.

Mongolia had a much higher proportion of older people using inpatient services in the past three years (over 50%) compared with 22% in PR China and 30% in the Russian Federation. Other countries in WHO-SAGE data (Ghana, India, Mexico, South Africa) all reported <20%.

- Plausible explanation for high hospital use could be from influence of the USSR health system. High inpatient rates have also been reported in former Soviet Union countries.
- Preference for inpatient care could also be due to more comprehensive services at the hospitals compared to outpatient and other primary health facilities.

References – He, Muenchrath, Kowal. 2012. *Shades of Gray: A Cross-Country Study of Health and Well-Being of the Older Populations in SAGE Countries, 2007–2010*. Washington, DC: US Census Bureau. | WHO.: SAGE Wave 1 Russian Academy of Medical Sciences. Geneva: World Health Organization; 2014. | Glonti K: Specialised and inpatient services. In: *Trends in health systems in the former Soviet services*. World Health Organization: European Observatory on Health Systems and Policies; 2014.

# Implications and ways forward

## *Supply interventions*

Limited and scattered infrastructure has contributed to geographical health service inequalities:

- Mongolian State Policy on Health (2017-2026) has promoted primary health care and home visits and the use of mobile health screening or M-Health (21 provinces, including 9 districts in Ulaanbaatar).
- M-Health services help to not only reach out to migrants in urban-*ger* areas but also address geographical barriers for low-income rural residents and nomadic populations in remote areas.

## *Demand interventions – promoting the use of primary health care*

- Several factors relating to bypassing local primary health care have been attributed to unavailability of diagnostic capacities, treatment options and essential medicines.
- According to a recent ADB report (three decades of partnership in Mongolia), primary health services might not yet meet user expectations on the range and quality of services and will require investment in financial and human resources as well as referral mechanisms.
- Recent evidence in Mongolia has reported that the FHC and SHC have incorporated health promotion into their routine services (42% of FHC in urban areas and 39% of SHC in rural areas).

References -- Uochi 2020. Mongolia poverty update 2018: Main report of household socio-economic survey. National Statistics Office of Mongolia..  
Asian Development Bank. 2021. Supporting primary health care in Mongolia. ADB East Asia Working Paper Series. No. 35. Manila. | WHO. 2021. Mongolia's mobile health clinics bring primary health care to vulnerable communities [[who.int/news-room/feature-stories/detail/](https://www.who.int/news-room/feature-stories/detail/)] 20 March 2021.

## Concluding notes

This study contributes to knowledge of older persons in low and middle-income countries. Its strength lies on international data partnerships and standardized questions for cross-country comparisons. There is potential for future follow-up data, subject to institutional support and funding.

Hypertension was reported as the most common reason for health service use. Promoting NCD prevention and primary care management could potentially reduce the costs from hospital-based care.

Reorienting to primary health care will require expanding range of service facilities and attracting skilled health professionals in remote areas.

Unofficial self-referrals to secondary and tertiary care resulting in out-of-pocket expenditure will continue to be a fundamental challenge to UHC.

Mongolia's population ageing could put further the demand for health services, especially disparities in outpatient service use for rural and urban *ger* areas and high inpatient service use.



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