

Further Analysis on the Democratic People's Republic of Korea Multiple Indicator Cluster Survey 2017

Generating evidence to deliver for children



2017 DPRK MICS Highlights: **Trends, Perspective and Analysis**

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of Statistics

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 MICS

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Acronyms and abbreviations

| | | | |
|------------------|--|------------|--|
| ANC | Antenatal care | WI1 | Wealth Index group 1 (lowest 20 per cent) |
| DHS | Demographic and Health Survey | WI2 | Wealth Index group 2 (middle 40 per cent) |
| DPRK | Democratic People’s Republic of Korea | WI3 | Wealth Index group 3 (highest 40 per cent) |
| ICT | Information and communications technology | | |
| IYCF | Infant and young child feeding | | |
| MICS | Multiple Indicator Cluster Survey | | |
| 2009 MICS | DPRK Multiple Indicator Cluster Survey 2009 | | |
| 2017 MICS | DPRK Multiple Indicator Cluster Survey 2017 | | |
| ORS | Oral rehydration salts | | |
| PNC | Postnatal care | | |
| SDHS | Socioeconomic, Demographic and Health Survey | | |
| TTC | Thermotolerant coliform | | |
| U5 | Under five years old | | |
| WASH | Water, sanitation and hygiene | | |
| WI | Wealth Index | | |



INTRODUCTION

Objective

While the June 2018 launch of the 2017 Multiple Indicator Cluster Survey Findings Report (2017 MICS) for the Democratic People's Republic of Korea (DPRK) was an important milestone, MICS generated many more possibilities for analysis.

For that reason, UNICEF DPRK took the decision to dig deeper into the data and to add four publications to the 2017 MICS report:

1. This **Highlights** report: adding trends, comparisons and analysis to the results.
2. **Geographical Analysis of Disparities** at provincial level.
3. **Provincial profiles**: key data for a province in a single brochure.
4. **Data Mining** report, adding additional analysis on water, sanitation and hygiene (WASH), nutrition and health.

The purpose of the further analysis is to examine the 2017 MICS data more closely and present results that complement the MICS report as well as informing and guiding policies and programming initiatives of the Government of the Democratic People's Republic of Korea (DPRK) and partners. The 2017 MICS further analysis was conducted by an independent consultant demographer Dirk Westhof, who is an expert in survey data analysis, together with the DPRK Central Bureau of Statistics and UNICEF DPRK. While the data in this report stems mainly from the 2017 MICS and calculations thereon carried out with CBS and UNICEF DPRK, the analysis provided is that of the author and does not necessarily reflect the views and opinions of UNICEF or the Government of DPRK.

This Highlights report aims to bring perspective to the MICS results. While the main MICS report presents all tables, this document highlights some trends, comparisons with peer groups, relationships, and analysis of the results. Gender analysis and a summary of the disparities analysis, along with several data mining activities such as higher education attendance and 'child discipline' indicators, are also included in this report. Trends were identified by comparing 2017 MICS results with those from:

- 2009 MICS (2009 MICS)
- 2012 Nutrition Survey
- 2014 Socioeconomic, Demographic and Health Survey (SDHS)

These surveys differ in some of their methodology and characteristics, including the period of conduct in the respective years, and are therefore not fully comparable. Comparisons therefore provide useful but qualified illustrations of trends. The 2009 MICS was conducted between September and October, and the 2017 MICS between August and October, which enables comparison of seasonal indicators like for nutrition.

Overall picture

- DPRK has an impressive performance level for most of the social development indicators.
- There are several areas in social development requiring attention and improvement [nutrition; higher education; water, sanitation and hygiene (WASH); and information and communications technology (ICT)].
- There is great equity in most of the basic service indicators, and .
- There are surprisingly high **inequities** observed in a number of indicators.
- At the provincial level, the geographical analysis shows a clear pattern of the least advanced provinces.

Key finding from 2017 MICS: A realistic picture emerges, presenting many positive outcomes for the country while clearly indicating challenging areas and disparities.

Introduction to 2017 MICS results

Progress and/or maintaining the highest possible levels

- DPRK is making progress on some very important indicators. The most significant progress has been made in reducing **stunting** (the prevalence among under-5 (U5) children in 2009 was 32 per cent; in 2017 it was 19 per cent) and related nutritional determinant indicators. In the years between the previous MICS in 2009 (2009 MICS) and 2017 MICS, several concerted campaigns were carried out to identify and resolve wasting (acute malnutrition) and thus lower the prevalence of stunting. However, although the overall rate of stunting has decreased, stunting among children aged 48–59 months in the lowest wealth index (WI) group (the poorest 20 per cent of the population) is still 41 per cent.
- U5 mortality in 2017 MICS is around 15 per 1,000 live births, with a confidence interval of 10–20 deaths per 1000, while the Central Bureau of Statistics' official administrative under-5 mortality rate is 18 per 1,000 live births for the same period and the latest 2017 estimate of the UN Inter-agency Group for Child Mortality Estimation is 19 deaths per 1,000 live births. Stunting is still around double what one would expect.
- DPRK maintains the best level possible for important indicators such as **early marriage, early childbearing and immunization** (fully vaccinated).
- **Maternal health** indicators (antenatal care (ANC) and postnatal care (PNC) coverage indicators) are all at extremely high levels, and the important indicator 'full content of ANC' has increased from 79 (2009) to 82 (SDHS) to 88 (2017 MICS). The only exception is the postnatal 'skin-to-skin contact' indicator (at only 27 per cent).
- The **total fertility rate** (TFR) is stable at 1.9 children per woman, below the replacement level.
- Access to primary, and even secondary, **education** is universal and 'parental support for learning' is exceptionally high at 96 per cent. Indicators related to support for learning at school all hover at levels around 90 per cent.
- Attendance at **early childhood education** of children age 36–59 months 73 per cent, with no disparity observed between urban and rural areas, girls and boys or wealth index groups.
- 2017 MICS measured **learning outcomes** and the results were very favourable for reading (95 per cent), while numerical skills (82 per cent) can be improved.
- With all children in school and learning, **child labour** has a low value of 5 per cent overall.
- DPRK has the world's best numbers for indicators such as **exclusive breastfeeding** (71 per cent).

- **Diarrhoea** prevalence has decreased from 14 per cent in 2009 to 11 per cent in 2017, while treatment indicators have improved:
 - » Treatment with zinc was a new indicator in 2009 (19 per cent) and has reached 51 per cent in 2017.
 - » The key indicator –use of oral rehydration salts (ORS) and continued feeding– went up from 67 per cent in 2009 to 71 per cent in 2017. These are positive results that impact nutrition indicators.
 - » Use of ORS is stable at 74 per cent (second best in the world).
- The '**Early Child Development Index**' score increased from 75 (2009) to 88 (2017) out of a possible perfect score of 100, a world-leading level.
- DPRK has no signs of sex selection or **gender** bias in young child indicators.
- Acceptance of **violence against women** is at a very low level, as international comparison shows, but the 10 per cent result still leaves room for improvement. This indicator has a strong north-south pattern.
- 2017 MICS reports increased possession of **household assets** but important assets such as refrigerators are owned by only 30 per cent of households.
- **Computer use** among the population is low (35 per cent combined for people aged 15–49 years).
- **Cellular phone possession** is at 69 per cent. It is not equitably distributed (78 per cent in urban vs 48 per cent in rural; 90 per cent in Pyongyang vs 51 per cent in North Pyongan) leapfrogging ownership of fixed lines, and cellular phone possession is more equitably distributed.

Slow or no progress

- **Use of iodized salt** remains at very low levels; just 38 per cent of the households are using salt with any amount of iodine for cooking.
- One of the biggest challenges in nutrition is the very low per cent of children age 6–23 months receiving **Minimum Acceptable Diet**, at 29 per cent (33 per cent in urban and 22 in rural areas).
- **Higher education** attainment is at low levels, especially for women (20 per cent, versus 37 per cent for men) although girls age 7–14 do better in learning outcome tests than boys of the same age.
- **Children in inadequate care** still number 17 per cent, with very high levels in the provinces of Jagang and North Pyongan.
- **Child discipline** is at an average high level. Some 59 per cent of children experienced some form of violent discipline during the month prior to the survey. However, very few countries have lower results, and the 59 per cent is high in part because of the method of calculation adopted.
- The use of **clean fuels** should be promoted, as overall use is just 10 per cent, with enormous inequities/disparities.

RESULTS

Key issue area 1: WASH

The survey used new measurements for WASH aligning with the global changes in the indicator definitions, focusing on the country's centuries-old practice – the use of human faeces in agriculture, causing worm infestations and devastating nutritional effects.

Drinking water treatment

Drinking water is not treated using any recommended methods in 83 per cent of the population, which is the same as in 2009.

| | 2009 | 2017 |
|------------------------------------|------|------|
| No treatment of drinking water (%) | 83 | 83 |

Water contamination

The level of faecal contamination in drinking water sources was based on the number of thermotolerant coliforms (TTCs) found in drinking water tested in around one in six households.

Table 1: Percentage of household population with TTCs in drinking water by source

| Source of water | TTC at drinking water source |
|-------------------------|------------------------------|
| Piped | 15 |
| Tube well/Borehole | 38 |
| Protected well | 33 |
| Water kiosk | 9 |
| Unprotected well/spring | 64 |
| Overall | 24 |

Overall, 24 per cent of drinking water is contaminated at the source, especially water from unprotected sources (64 per cent). The least contaminated water is kiosk water (a water kiosk is an urban distribution point for drinking water). An average of one in seven samples of piped water was found to be contaminated. The percentage

of population with TTCs (E. coli) in source water is thus strongly related with not having piped water sourced from a water company.

Key finding: A total of 24 per cent of the population have TTCs in their drinking water source (one in four households). In urban areas the figure is 10 per cent, while in rural areas it is 45 per cent. Thus people in rural areas drink contaminated water almost five times as often as people in urban areas.

Safely managed drinking water

Safely managed drinking water is the one located on premises, available when needed and free from contamination. The percentage of household population having safely managed drinking water is 61 per cent, with a breakdown of 71 per cent urban and 45 per cent rural.

Sanitation

There is no increase in sanitation coverage since 2009. According to 2017 MICS, **16 per cent** of the household population have no access to improved sanitation (8 per cent in urban and 28 per cent in rural areas), was one per cent higher at 17 per cent in 2009.

Trend: The 2017 value is essentially the same as in 2009

| | 2009 | 2017 |
|---------------------------|------|------|
| Unimproved sanitation (%) | 17 | 16 |

In sanitation a very important information on the treatment of excreta from improved pit latrines and septic tanks were collected in MICS 2017. Almost all excreta from these sources (>90 per cent) is returned to agricultural fields. Access to correctly managed sanitation in DPRK (sewer connection and/or safely managed excreta from improved pit latrines and septic tanks) is just 48 per cent and a priority for action in the near future.



Key issue area 2: Nutrition

Table 2 below show notable progress in the **nutritional status** of U5 children over the last eight years.

Table 2: Comparison of anthropometrical results 2009–2017

| Survey | Underweight (%) | | Stunting (%) | | Wasting (%) | |
|-------------------------------------|-------------------|-----------|-------------------|-----------|-------------------|-----------|
| | Moderate & severe | Severe | Moderate & severe | Severe | Moderate & severe | Severe |
| 2009 MICS | 19 | 4 | 32 | 8 | 5.0 | 0.5 |
| Nutrition 2012 | 15 | 4 | 28 | 7 | 4.0 | 0.6 |
| 2017 MICS | 9 | 2 | 19 | 5 | 2.5 | 0.5 |
| Per cent Reduction 2012–2017 | 38 | 50 | 33 | 29 | 38 | 17 |

Key finding: The differences by WI groups are large: just 4 per cent in the bottom 20 per cent WI group (WI1) versus 91 per cent in the top 40 per cent WI group (WI3) use correctly managed sanitation. The difference is a factor of 23.

The effect of type of sanitation on stunting and diarrhoea are explored in detail in the 2017 MICS data mining report, *Sanitation, Water, Diarrhoea and Nutrition*. For example:

- In households with access to improved sanitation AND correct disposal (not to agricultural land), the stunting prevalence among children under 5 years is 16 per cent and the same is 22 per cent among children living in households with no access to improved sanitation and safe disposal provision. The level of **stunting is 40 per cent higher** among children living in households **without access to improved sanitation** and/or using incorrect disposal practices (affecting over half the population) compared to the rest.

Safe disposal of child faeces

The children whose faeces were disposed safely is 74 per cent in MICS 2017 compared with 67 per cent in 2009.

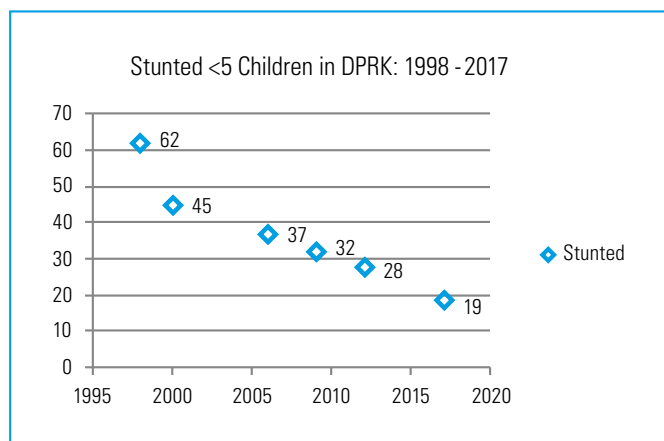
Trend: This is a high 74 per cent, up from 67 per cent in 2009.

| | 2009 | 2017 |
|-----------------------------|------|------|
| Safe disposal of faeces (%) | 67 | 74 |

All anthropometry indicators measured in 2017 MICS show remarkable improvements compared to earlier years. For example, the stunting prevalence among U5 children dropped from 32 per cent to 19 per cent during 2009 to 2017. This is a strong decline but not impossible given the circumstances and the trend.

Trend: The recent decline is not a sudden drop but the continuation of a trend.

Figure 1: Stunting prevalence among children under 5, 1998–2017, MICS and Nutrition surveys (per cent)



From left to right: 1998 MICS, 2000 MICS, 2002 Nutrition Assessment, 2004 Nutrition Assessment, 2009 MICS, 2012 National Nutrition Survey, 2017 MICS

These figures are supported by progress in determinant indicators:

- **Early initiation of breastfeeding** is up to 43 per cent in 2017, from 28 per cent in 2012 and 18 per cent in 2009.
- **Exclusive breastfeeding** is stable at a very high level: 71 per cent in 2017 versus 69 per cent in 2012, among children age 0-5 months.
- **Appropriate breastfeeding** is up from 51 per cent in 2009 to 62 per cent in 2017, among children age 0-23 months.

Infant and young child feeding (IYCF)

- The percentage of children aged 6–23 months consuming at least four food groups out of seven – measured and reported as **Minimum Dietary Diversity** – was 26.5 per cent in 2012, is 47 per cent in 2017.
- IYCF: The percentage of children aged 6–23 months achieving **minimum meal frequency** in 2009 was 49 per cent, has increased to 75 per cent in 2017.
- Another important indicator of child nutrition is the **Minimum Acceptable Diet** among children age 6-23 months, is 29 per cent in 2017 a clear issue

Figure 2: Stunting and key feeding practices, 2009–2017 (per cent)

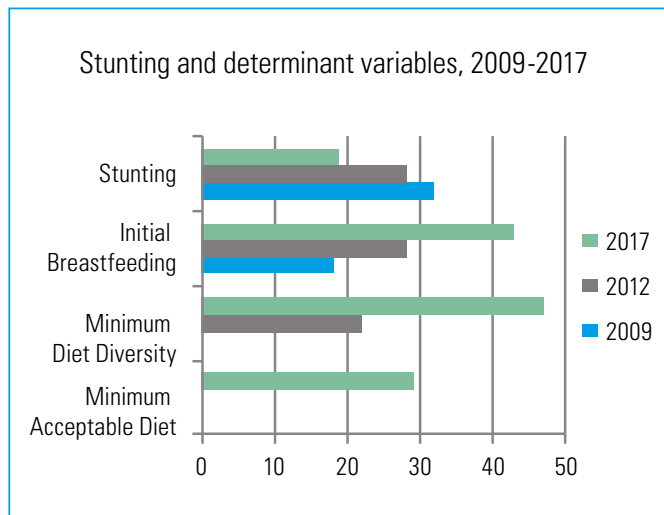


Table 3 compares the IYCF practices in DPRK with a few countries in the region.

Table 3: IYCF practices in various countries

| Country/ survey | Percentage of children who received: | | |
|-----------------------|--------------------------------------|------------------------------|-------------------------------|
| | Minimum Dietary Diversity | Minimum Meal Frequency | Minimum Acceptable Diet |
| DPRK, 2017 MICS | 47 | 75 | 29 |
| Nepal, DHS 2016 | 47 | 72 | 36 |
| Indonesia, DHS 12 | 58 | 66 | 37 |
| Bangladesh, DHS 14 | 28 | 64 | 23 |
| Myanmar, DHS 12 | 25 | 58 | 16 |

The results for DPRK are therefore good in the international context, with the exception of the result for Minimum Acceptable Diet.

Progress is also supported by the decline in prevalence of diarrhoea and the very strong relationship found between diarrhoea and the prevalence of stunting in DPRK.

Key findings:

- **Stunting** levels are going down rapidly but are still highly relevant to the level of mortality, confirming the key role of WASH and nutrition but also of food intake. Only 29 per cent of children age 6-23 months in DPRK is receiving the Minimum Acceptable Diet.
- With **stunting** at 19 per cent, **underweight** at 9 per cent and **wasting** at 2.5 per cent, the number of children affected are: 323,000 stunted, 153,000 underweight and 41,000 wasted.

Breastfeeding

- A high percentage of newborns are breastfed in DPRK and for a long period, 69 per cent children age 12-15 months and 27 per cent children age 20-23 months continue to receive breast milk. Some 83 per cent of newborns are breastfed within 24 hours of birth, but 'early initiation' of breastfeeding (within one hour of birth) is low at 43 per cent. However, the numbers are improving, showing a positive trend.

Trend: Early initiation of breastfeeding has more than doubled since 2009.

| | 2009 MICS | Nutrition 12 | 2017 MICS |
|---------------------------------------|-----------|--------------|-----------|
| Early initiation of breastfeeding (%) | 18 | 28 | 43 |

The **consumption of iodized salt** is very low in DPRK.

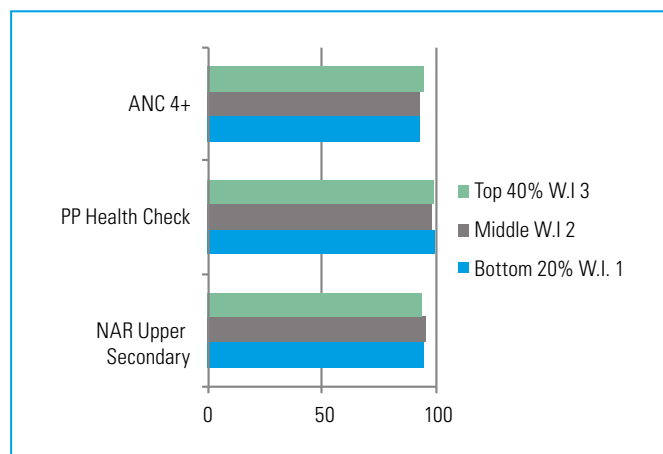
- The proportion of households consuming salt with any level of iodine present is only 37 per cent (26 per cent in rural vs 44 per cent in urban).
- The issue is concentrated in rural areas (26 per cent consumption), while in urban areas the level of consumption is better at 44 per cent.
- In 2009 MICS used a 15+ level of iodine content in salt as a minimum acceptable level: in that survey, 20 per cent of households used salt with that level of iodine content. The result in 2017 MICS for the 15+ was also 20 per cent, meaning that no progress was made between 2009 and 2017.

Equity, disparities and geography

The geographical analysis is presented in full in a separate document but some highlights are presented below.

- 2017 MICS was the first survey to analyse all data not just by area, gender and province (and age) but also by applying WI groupings.
- The Wealth Index is a background characteristic used as a proxy to capture a household's cumulative living standard.
- In 2017 MICS, instead of using the quintile groups, three groups are used: the 20 per cent lowest (WI1), the 40 per cent middle (WI2) and the 40 per cent highest (WI3).
- The ratio highest performance/lowest performance will be used to describe equity. A value close to 1 translates as equity.
- DPRK is a good example of excellent service organized by the state. Everyone is taken care of. Maternal health, child health and education indicators are all at the highest level and show excellent equity.

Figure 3: No disparities in education and health services (per cent)



In the UNICEF publication *The State of the World's Children*, disparities are presented for all countries in the world. The data for childbirth being facilitated by a skilled birth attendant shows the absolute equity in DPRK is at much higher levels than in the rest of the world, as is the case for all other indicators presented in that publication, except for stunting.

Table 4: Disparities by household wealth in the international context for skilled birth attendant

| Skilled birth attendant | Wealth quintile 1 (%) | Wealth quintile 5 (%) | Ratio |
|-------------------------|-----------------------|-----------------------|-------|
| DPRK | 100 | 100 | 1.0 |
| World | 43 | 88 | 2.1 |
| East Asia Pacific | 61 | 97 | 1.6 |
| Thailand | 98 | 100 | 1.0 |

What is more surprising is that important disparities exist by WI group for a range of indicators. Important inequities exist in DPRK in indicators such as access to higher education, water and sanitation, ICT and nutrition.

Key findings:

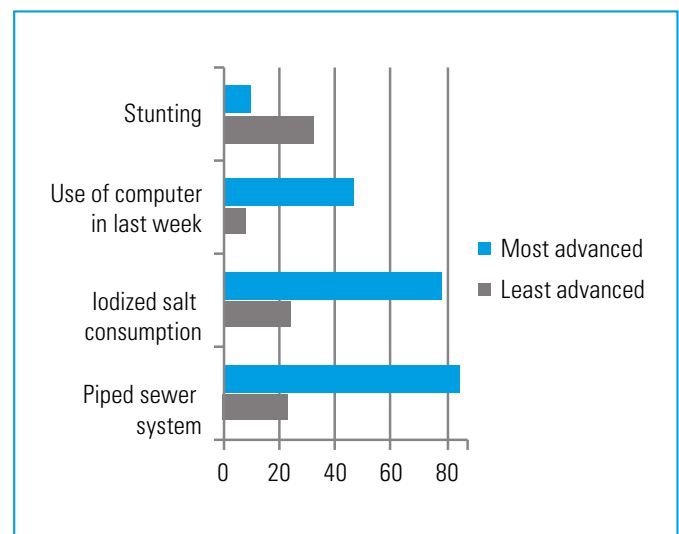
- Stunting levels in WI1 (20 per cent lowest) are almost twice as high in WI3 (40 per cent highest).
- For correctly managed sanitation, the ratio lowest/highest is 23 times.
- Child labour has a ratio of eight.
- Even consumption of iodized salt has a ratio of three.

Table 5: The top 10 disparities by household wealth in 2017 MICS

| Area | Indicator | WI1 (%) | WI2 (%) | WI3 (%) | Ratio (WI3/WI1)*100 |
|-----------|--|---------|---------|---------|---------------------|
| WASH | Correctly managed sanitation | 4.0 | 26.0 | 91.0 | 23 |
| | Households with TTCs in water | 45.0 | 27.0 | 10.0 | 5 |
| CP | Child labour (5-17 years) | 10.9 | 6.0 | 1.3 | 8 |
| Education | Female education at higher level | 10.0 | 16.0 | 29.0 | 3 |
| | Households using iodized salt | 18.0 | 31.0 | 54.0 | 3 |
| Nutrition | Stunting (under 5 years) | 27.0 | 20.0 | 14.0 | 2 |
| | Minimum Acceptable Diet (children age 6-23 months) | 20.0 | 25.0 | 36.0 | 2 |
| ICT | Computer related activity by women | 15.0 | 24.0 | 44.0 | 3 |
| | Households with fixed telephone line | 12.0 | 32.0 | 77.0 | 7 |
| | Households with cellular phone | 36.0 | 66.0 | 91.0 | 3 |

Geography

Geographical analysis at the provincial level (10 provinces) is available in a separate publication (see *Geographical Analysis* in this series). Disparities are quite large for a wide range of indicators because there are 10 provinces and because of sample errors. Of course, some regions are poorer than others and agricultural conditions vary. Other variations include that some provinces have a higher percentage of urban populations, others are closer to the sea, and some parts are more mountainous, for example.

Figure 4: Comparison of provincial levels of progress, 2017 MICS

In the analysis the 'tertile' (three groups) method has been applied, thereby organizing the provincial values into three groups for all indicators. The three groups are lowest performance, average performance and highest performance. By counting the number of times a province is among the lowest performers and among the highest performers the results shown in table 6 are achieved.

The two provinces that have the highest proportion of population in WI1 – Ryanggang and South Hwanghae – indeed come among the least advanced provinces based on 26 indicators. Pyongyang is obviously the highest performer overall but the analysis delivers several surprises; for example, the position of North Pyongan.

For details, refer to other publications in the 2017 MICS further analysis series, the Geographical Analysis of Disparities at provincial level and the individual Provincial profiles.

Table 6: Final tertile rankings for all indicators, by province, least advanced to most advanced

| Province | Performance count (out of 26 indicators) | | Final result based on 26 indicators |
|----------------|--|--------|-------------------------------------|
| | Highest | Lowest | |
| South Hwanghae | 0 | 16 | |
| North Pyongan | 0 | 14 | |
| North Hwanghae | 1 | 11 | |
| Ryanggang | 6 | 12 | |
| Jagang | 5 | 10 | |

| Province | Performance count (out of 26 indicators) | | Final result based on 26 indicators |
|----------------|--|--------|-------------------------------------|
| | Highest | Lowest | |
| South Hamgyong | 4 | 6 | |
| Kangwon | 7 | 8 | |
| South Pyongan | 5 | 6 | |
| North Hamgyong | 11 | 5 | |
| Pyongyang | 24 | 0 | |

Trends, comparisons, disparities and other key results per sector

Fertility

TFR: The total fertility rate (1.9 – the number of children a woman will have in her childbearing years) and crude birth rate (15 live births per 1,000 population) are more or less at the same level as they were in 2009 and 2014. But, there is an increase in the fertility rate among younger women age 20-24 years, the age-specific fertility rate increased from 39 to 95 during 2012 to 2017.

Table 7: Age-specific fertility in 2012 and 2017 (births per 1,000 women)

| Age group | Fertility 2012 | Fertility 2017 | Type of change |
|-----------|----------------|----------------|----------------|
| 20–24 | 39 | 95 | Increase |
| 25–29 | 198 | 182 | Similar |
| 30–34 | 130 | 84 | Decrease |
| 35–39 | 11 | 18 | Similar |

Trend: TFR is just below replacement level but after decreasing from a level of 2.2 level in the 1990s to 1.9 in 2009, the decline has bottomed out.

- However, the population of DPRK is still growing at 0.5 per cent per annum because of large cohorts in the fertile age.
- The **crude birth rate** is stable at 14.5 per 1,000 population, and consequently the proportion of U5 children is stable at 7 per cent.
- The under-15 population is stable as well at 5 million.
- The data reveal that, child marriage, child mothers and early childbearing do not exist in DPRK.
- The percentage of demand for **family planning** satisfied with modern methods is 90 per cent (all methods is 92 per cent) with no disparities/discrepancies.

Trend: SDHS had a similar result of 92 per cent for family planning. This indicator is at among the highest levels worldwide.

Assets

While DPRK shows rising levels of personal asset ownership, especially in rural areas, levels are still low overall.

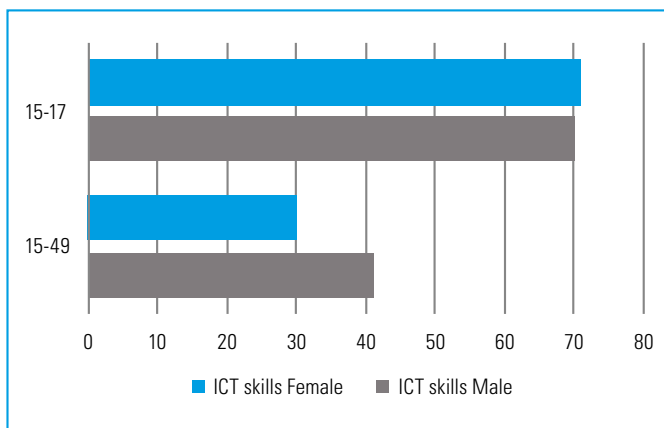
Table 8: Comparison of personal asset ownership between SDHS14 and 2017 MICS (per cent)

| Asset | SDHS | MICS | Type of change |
|--------------------|------|------|------------------|
| Television | 99 | 98 | Same |
| Bicycle | 82 | 83 | Same |
| Rice cooker | 60 | 63 | Limited progress |
| Rice cooker urban | 69 | 70 | Same |
| Rice cooker rural | 45 | 51 | Strong progress |
| Landline telephone | 42 | 46 | Progress |
| Landline urban | 61 | 59 | Limited decline |
| Landline rural | 12 | 18 | Strong progress |

ICT

Computers and intranet are in the early stages of development, at low levels and with large disparities. For the age group 15–49, the gender gap in ICT skills is considerable (30 per cent of females and 41 per cent of males 15–49 years have skills) but in the younger age group (15–17 years) skill levels are much higher for both males (65 per cent) and females (66 per cent). The gender gap has been closed.

Figure 5: Comparison of ICT skills by gender and age group



Exposure to media

- Exposure to media is very high in DPRK. For the age group 15–49, female exposure (all three media, i.e. radio, television and newspapers) is 80 per cent and male exposure is 89 per cent.
- Newspaper is the medium with the lowest coverage (female is 84 per cent and male is 92 per cent).
- Newspaper exposure is especially low among young people. At age group 15–17 it is 70 per cent for females and 71 per cent for males. Thus the results for youth are lower but without a significant gender gap.

Childcare and violence issues

The total number of U5 children with inadequate supervision is 17 per cent and no disparity observed by area (rural/urban) and household wealth. However, provincial disparities are notable: from 8 (Pyongyang) to 24 (North Pyongan) to 36 (Jagang).

Trend: The value for inadequate care is the same as in 2009.

| | 2009 | 2017 |
|---------------------------------|------|------|
| Children in inadequate care (%) | 17 | 17 |

To put this figure in an international context, the value is the same as in Pakistan, but West African countries have values up to 60 per cent. However, in Vietnam the figure is 7 per cent and in Uzbekistan it is 5 per cent. There is thus room for improvement in DPRK for this indicator.

Child discipline

The percentage of children that experience any type of violent discipline is high at 59 per cent in DPRK, with no differences between urban and rural areas. However, notable disparities observed among the provinces, low in Pyongyang at 37 per cent to more than double that in Ryanggang (78 per cent). More proportion of boys suffer from violence discipline, as the figure for male children is 63 per cent and for female children it is 55 per cent. Severe physical punishment at 3 per cent, with notable difference among the provinces (14 per cent in Ryanggang and less than 1 per cent in Pyongyang).

One of the biggest challenge in DPRK is the low proportion of parents using only non-violent discipline (37 per cent) combined with the high percentages for psychological punishment and physical aggression (43 per cent each).

The overall figure for use of child discipline is high (59 per cent), which prompted further examination into the categories behind these numbers. It turns out that this figure is high because of the way the index is calculated and because shouting is included as a form of violent discipline. In the survey, a series of 11 questions were asked on the methods that were used to discipline a child. A new analysis of the results (by all 11 categories) shows that the three types of positive discipline are by far the three largest response categories. However, the parents surveyed often gave several responses, which included the use of one or more of the non-positive forms of discipline.

Table 9: Results for the 11 categories of child discipline

| Type of discipline | Usage (%) | Specifics of discipline |
|--------------------|-----------|---------------------------------|
| Good | 91 | Explained |
| | 47 | Distracted |
| | 40 | Light punishment (no ice cream) |
| Psychological | 39 | Shouted |
| | 15 | Insulted |
| | Physical | 26 |
| 19 | | Hit on the bottom |
| 17 | | Slapped on the arm |
| Severe | 2 | Hit with a hard object |
| | 2 | Slapped in the face |
| | 2 | Beat the child |

Thus the three types of positive discipline are the most commonly used forms. However, parents also often use one of the negative forms, of which shouting is the most common.

Levels of severe types of violent discipline are low, while shouting (39 per cent) and shaking (26 per cent) are most used types of psychological and physical violent discipline. Thus, almost all parents first try positive forms of discipline and the strongest contributing factor to the overall observed level of violent discipline is shouting at the child.

Attitudes towards domestic violence

Acceptance of domestic violence (wife beating) among women 15–49 years for any out of five reasons¹ is low in DPRK at 10 per cent. Surprisingly, the acceptance is slightly higher among women from urban compared with rural areas (11 and 8 per cent, respectively). Zimbabwe has the world’s median value with 37 per cent acceptance. Afghanistan has the highest rate at 90 per cent. In East Asia and the Pacific the average is 28 per cent. Ukraine and Belarus are lowest at 4 per cent. Thus, DPRK is in a very good category by international standards.

Of the five reasons posited, the one with the highest response was ‘if she neglects the children’ (7 per cent), but ‘burning the food’ is not an accepted reason for violence (1 per cent). Acceptance among younger women is lower; consequently, acceptance of domestic violence among unmarried women (6 per cent) is just half that among married women (11 per cent).

The provincial analysis offers a very wide range, from South Hwanghae (1 per cent) to North Hamgyong (21 per cent). The data show notable **north-south divide** but there is no relationship between acceptance of domestic violence and poverty.

Education

All children go to school in DPRK and complete 11 years of schooling, a result confirmed by school attendance and attainment figures. 2017 MICS measured the quality of education via a simple test of learning achievements which shows that foundational reading skills are 95 per cent and foundational numeracy skills 81 per cent with total equity. **However, girls are doing better on tests overall but far fewer girls are being admitted to higher education.**

1.– If wife goes out without telling husband? If wife neglects the children? If wife argues with husband? If wife refuses to have sex with husband? Or If wife burns the food?

Early childhood development and support

An adult household member engaging with children 35–59 months four or more activities during the three days period is extremely high at 95 per cent and with total equity.

Trend: Support for learning was already high in 2009 but has increased further.

| | 2009 | 2017 |
|--------------------------|------|------|
| Support for learning (%) | 91 | 95 |

Early Child Development Index

The early child development index score is 88 per cent with no notable difference between rural and urban areas. The index score is higher for children from wealthier (WI3) households compared to children from poor (WI1) households (91 per cent and 81 per cent, respectively). Overall, when comparing with data from other countries, DPRK is having one of the best ECD provisions in the region as well as globally.

Trend: The Early Child Development Index for children aged 36–59 months (3–5 years) has increased significantly since 2009.

| | 2009 | 2017 |
|-----------------------------------|------|------|
| Early Child Development Index (%) | 75 | 88 |

The Early Child Development Index has four components: literacy, physical, social–emotional and learning, of which literacy (especially in the age group 36–47 months) normally has very low values.

Table 10: Comparison of Early Child Development Index score, 2009 and 2017

| | 2009 (%) | 2017 (%) |
|---------------------------------------|----------|----------|
| Literacy | 13 | 29 |
| Physical | 95 | 100 |
| Social–emotional | 76 | 86 |
| Learning | 97 | 98 |
| Early Child Development Index overall | 75 | 88 |

While all components show improvements, the main gain is in literacy.



Attendance

The data show that all children go to school in DPRK. At age 11, 100 per cent are attending school. However, by age 17, half of all children are not attending school anymore. By that age, though, everyone has completed primary, lower secondary and even upper secondary education, which is a very important achievement.

Net attendance at primary education is 97 per cent, reflecting the fact that some children begin school late. Net attendance in lower secondary and upper secondary is 95 per cent because almost 5 per cent of children are behind, not because they are out of school: only 0.2 per cent of children are out of school in upper secondary. Education is totally equitable.

Analysis of grade by age shows that the vast majority of children are in the correct group for their age and that they stay in that group; even in lower secondary school 90 per cent of children are in the right group for their age.

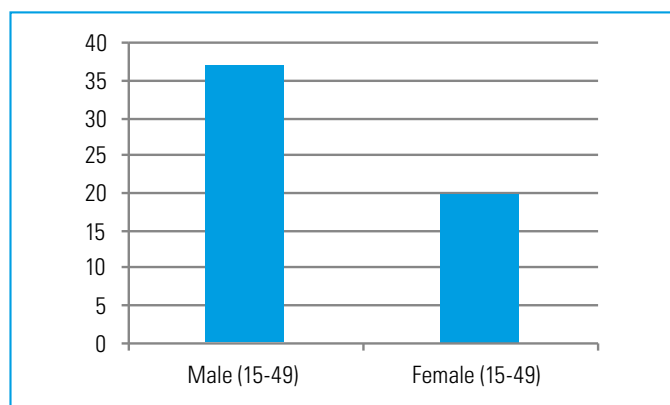
Learning skills

Foundational reading skills among children age 7-14 years is 95 per cent, with no rural/urban or male/female differentials noticed. **Foundational numeracy skills** are measured using the ability of the child in relation to 'number reading', 'number discrimination', 'addition' and 'pattern recognition and completion'. Overall, 82 per cent of all children age 7-14 years demonstrate foundational numeracy skills. Girls (84 per cent) showed slightly better numeracy skills than boys (80 per cent). Most provinces are in the 85 per cent range when it comes to foundational numeracy skills, while three provinces score poorly: North Hamgyong (66 per cent), Jagang (66 per cent) and North Pyongan (68 per cent).

Educational attainment

Everyone in DPRK is **literate**, which is a great achievement. All children receive 11 years of education, but a large and sudden drop in educational attendance occurs at age 17. Attainment rates for **higher education** are quite low in DPRK, especially for women. Males aged 15–49 (37 per cent) have almost double the rate of higher education attainment of women aged 15–49 (20 per cent). The difference in the attainment of higher education of male or female from rural and urban areas is also high.

Figure 6: Comparison of attainment of higher education by gender (per cent)



However, female attainment of higher education is improving. In 2009 MICS, the proportion of females aged 15–49 years with higher education was 16 per cent. This trend of improvement seems to be confirmed by age-specific data but analysis must be undertaken with care because one third of boys aged 17–19 (but fewer girls) are in the armed forces and are therefore neither in the sample or denominator, nor attending higher education (yet).

Trend: Some improvement in women attaining higher education.

| | 2009 | 2017 |
|---|------|------|
| Females 15-49 with higher education (%) | 16 | 20 |

Adolescents' (17–19) attendance in higher education

Data mining delivers some interesting results regarding higher education attendance. The average attendance for adolescents aged 17–19 in higher education is 32 per cent. However, the variations by WI groups are very large, as shown in the box below.

| | Wealth Index groups | | |
|-------|---------------------|-----|-----|
| | WI1 | WI2 | WI3 |
| Total | 18% | 27% | 44% |

The difference between the numbers of urban and rural adolescents participating in higher education is also substantial.

| Urban | Rural |
|-------|-------|
| 38% | 23% |

However, the differences between regions are insignificant, with the exception of Pyongyang.

| Mountain | Middle | Southwest | Pyongyang |
|----------|--------|-----------|-----------|
| 32% | 33% | 27% | 42% |

The biggest surprise is the large difference by gender.

| Male | Female |
|------|--------|
| 41 | 24 |

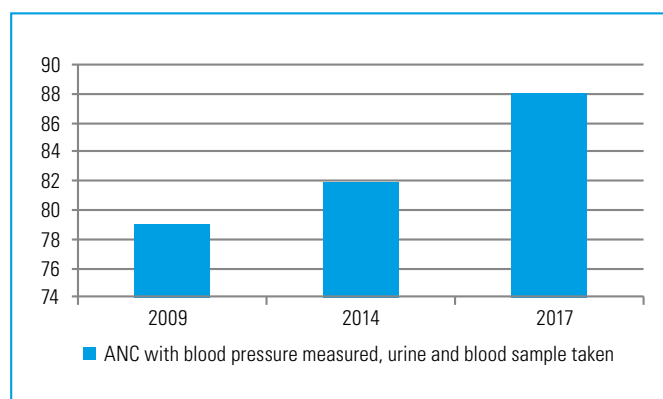
Girls do better in tests but have less access to higher education. Male participation is much higher but the numbers are biased because of the number of boys aged 17–19 in the armed forces, as explained earlier.

Maternal health care and ANC trends

Trend: ANC is at very high levels.

| | 2009 (%) | 2014 (%) | 2017 (%) | Change |
|-------------------------------|----------|----------|----------|---------|
| ANC by a skilled professional | 99.6 | | 99.6 | Similar |
| ANC by (assistant) doctor | | 84 | 92.0 | Up |
| ANC 4+ | 94.0 | | 94.0 | Stable |

Figure 7: Content of antenatal care coverage



Key finding: There has been steady progress in the content of antenatal care over the years. Blood pressure is measured and urine and blood samples are taken for testing in 88 per cent of cases. However, some notable differences observed among the provinces with North Pyongyang with 69 per cent and in Pyongyang 99 per cent.

Some 84 per cent of women were protected against neonatal tetanus in 2017. A similar total of 80 per cent received at least two doses of tetanus vaccine during pregnancy, down from 87 per cent of women in the 2014 SDHS. The most challenging situation is in Ryanggang and Jagang Provinces.

Eight per cent of the deliveries happens at home (5 per cent in urban vs 13 per cent in rural). Two provinces, North Hwanghae and South Pyongan are reporting more than 10 per cent deliveries at home.

Trend: Home deliveries are up overall but concentrated in two provinces.

| | 2009 | 2014 | 2017 |
|---------------------|------|------|------|
| Home deliveries (%) | 5 | 9 | 8 |

Skilled birth attendance is almost 100 per cent and even attendance by a doctor/assistant doctor as a skilled birth attendant is 90 per cent. This is a very high level internationally.

PNC visits for newborns within one week of birth are universal, with 87 per cent of these visits conducted by a doctor. The provider for all first PNC visits is either a doctor or assistant doctor. This is a substantial improvement, especially in rural areas (20 per cent increase). Postnatal health checks are carried out for 98 per cent of mothers and newborns. Less than 1 per cent of mothers and newborns in the country did not receive postnatal checks, with this result mainly concentrated in one province: North Hwanghae with 4 per cent.

Key finding: Post-partum care stands at a very high level with equity. The only indicator with a low value is also the least equitable: skin-to-skin contact.

Figure 8: Percentage of first postnatal care visits provided by a doctor, by area, 2014 and 2017

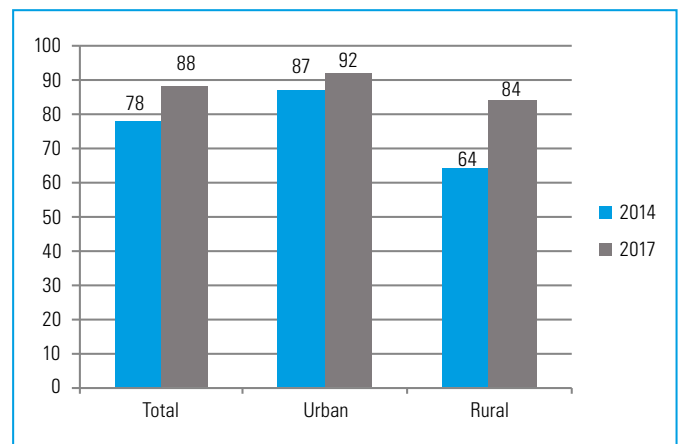


Table 11: Performance on post-partum care indicators by wealth index group

| Indicator | WI1 (%) | WI2 (%) | WI3 (%) | Ratio (highest performance/lowest performance) |
|---|---------|---------|---------|--|
| Post-partum stay three days or more | 92.0 | 80.0 | 87.0 | 0.9 |
| Newborns who received a least two PNC functions within two days after birth | 97.0 | 98.0 | 98.0 | 1.0 |
| Health check following birth while in facility or at home | 100.0 | 98.0 | 99.0 | 1.0 |
| Dried (wiped) after birth | 90.2 | 86.9 | 83.8 | 0.9 |
| Given skin-to-skin contact with mother | 25.0 | 21.0 | 33.0 | 1.3 |

Child health

In total, 97 per cent of children are **fully vaccinated**. All provinces, except Ryanggang and Jagang have more than 90 per cent of the children fully vaccinated.

At 11 per cent, the **prevalence of diarrhoea** is not low in an international context. The prevalence is highest in southwestern provinces. However, in 2009 the overall diarrhoea prevalence was 14 per cent so there has been some improvement, but the reduction has occurred primarily in urban areas.

Trend: The prevalence of diarrhoea is slowly falling.

| | Diarrhoea 2009 (%) | Diarrhoea 2017 (%) |
|-------|--------------------|--------------------|
| Total | 14 | 11 |
| Urban | 13 | 10 |
| Rural | 14 | 13 |

The data on how diarrhoea is treated show a steep rise in the use of zinc, stable use of ORS and a significant drop in use of antibiotics and. Even so, antibiotic use is still very high.

Trend: Treatment with ORS has remained stable at 74 per cent, a level just below world leader Bangladesh (77 per cent).

| Treatment | 2009 (%) | 2017 (%) |
|--|-----------|-----------|
| Zinc | 19 | 55 |
| Antibiotic | 47 | 39 |
| ORS | 74 | 74 |
| Sustainable Development Goal: ORS and continued feeding | 67 | 74 |

Key finding: DPRK has world’s best levels for diarrhoea treatment after Bangladesh.

Gender

Population numbers show no signs of sex-selective abortions or neglect of female children. The sex ratio is exactly what it should be: 104 males per 100 females in the lowest age groups.

| Age | Male/female ratio |
|-------|-------------------|
| 0–4 | 1.05 |
| 5–9 | 1.04 |
| 10–14 | 1.04 |

The numbers by single age in the 2017 MICS report (table DQ1.1) also show a perfectly normal picture. This normal situation is confirmed by mortality. Male child mortality is even almost double that of female child mortality (because of the low numbers the confidence intervals are large). The U5 mortality rate for males is 19 per 1,000 live births compared with just 10 for girls.

Data on nutrition, health and educational behaviour were also examined closely for any gender-specific differences.

Table 12: Comparison of nutrition, health and education indicators by gender (per cent)

| Indicator | Male | Female | Comment |
|-----------------------------------|------|--------|----------------------|
| Underweight | 10 | 9 | Boys slightly higher |
| Wasting | 3 | 2 | Boys slightly higher |
| Stunting | 18 | 20 | Girls higher |
| Minimum Dietary Diversity | 53 | 46 | Boys higher |
| Minimum Meal Frequency | 76 | 73 | Boys higher |
| Minimum Acceptable Diet | 31 | 28 | Boys higher |
| Fully vaccinated | 98 | 97 | Same |
| Has diarrhoea | 12 | 10 | Boys higher |
| No treatment sought for diarrhoea | 21 | 13 | Boys higher |
| Education attendance | 100 | 100 | Same |

Thus although nutritional indicators such as Minimum Meal Frequency and Minimum Dietary Diversity show differences – as reflected in stunting (but not in the other two indicators, underweight and wasting) – indicators related to medical treatment show no gender differences at all. However, when we dig deeper into stunting by WI groups there are some wide disparities. More information on these can be found in another MICS analysis publication in this series, *Sanitation, Water, Diarrhoea and Nutrition*.

Key findings: There are no signs of any gender discrimination against unborn/young girls but after age 17 discrimination starts with participation in higher education.

| Male | Female |
|------|--------|
| 41 % | 24 % |

Another negative gender difference indicator is related to **higher education**, as has been seen already. While all indicators for education until upper secondary school have gender-neutral results, the greatest gender-specific difference is seen in the rate of attendance at higher education for adolescents aged 17–19.



SUMMARY AND RECOMMENDATIONS

The 2017 MICS report, the result of excellent cooperation between UNICEF and the Central Bureau of Statistics, produced a high-quality data. It was also very encouraging that the Bureau was open to working with WI groups and on further analysis of MICS data to identify existing disparities. The results indicate many improvements, a high level for a wide range of indicators and a clear need to address inequity issues, starting with tackling the issue that leads to the greatest inequity: the poor management of human excreta. That in turn leads to contaminated drinking water, to diarrhoea, to stunted children and a plethora of unwelcome results. Tackling this situation –combined with a greater focus on quality of services– will result in very positive outcomes for mothers and children in DPRK.

As in previous surveys, several social indicators are at 100 per cent, which by definition means total equity (the same is true for 0 per cent but 100 per cent is of course preferable). The term ‘world leader’ is used when the indicator is at the highest possible level and where there are no other countries with higher values (although often the leadership is shared).

DPRK world-leading indicators include:

- Education indicators are at the best possible levels: every child is attending (primary and secondary) school *and* learning
- No child marriage
- No child mothers
- No adolescent fertility or childbearing
- 100 per cent birth registration
- 100 per cent literacy
- 100 per cent mothers receiving ANC
- 100 per cent mothers attended by a skilled birth attendant
- 100 per cent of mothers receive PNC
- 100 per cent of children receive PNC
- DPRK has **highest** proportion in the world of married women with children.

The country is also a world leader in:

- Breastfeeding – ‘exclusive breastfeeding’
- Vaccination
- ORS and oral rehydration therapy use

- Treatment of fever
- Early child development.

For these indicators the future focus must be on improvement of *quality* of the services.

Given the level of income, the results are amazingly good; however, several areas exist where the country is **not a world leader**.

Areas which need attention include:

- Nutrition: stunting especially is still a big challenge despite considerable improvement. This situation is fuelled by the low prevalence of the important Minimum Acceptable Diet indicator.
- WASH: access to uncontaminated drinking water and improved sanitation with correct excreta management are both pressing issues.
- The current WASH situation leads to high levels of diarrhoea, affecting wasting and stunting of children.
- Access to higher education, especially for young women.
- ICT is just starting and is at low levels.
- Clean fuels have not really reached DPRK yet.
- The country is still facing a big issue with iodized salt.
- Post-partum skin-to-skin contact is at very low levels.

Ownership of common household assets such as refrigerators needs to improve:

- Acceptance of violence against children is too high.
- The number of children in inadequate care is too high.

Recommendations

Despite many excellent and world-leading results, the 2017 MICS analysis –especially the equity analysis and geographical analysis– shows that there are several priority indicators that need attention to achieve even better equity in DPRK. The results also point to another conclusion: the next survey should focus less on coverage and more on quality and/or additional complementary evidence generation on knowledge, attitudes and practices of care-givers should be initiated.



The global MICS had some deficiencies in the DPRK context. Several modules did not give results –for example, U5 mortality, because of the low level of U5 mortality in the DPRK. MICS is a worldwide survey but given the good level for many indicators in DPRK, it has some limitations.

At the same time, MICS focuses primarily on coverage issues and less on quality. It also pays a great deal of attention to diseases that have very low mortality in DPRK (such as diarrhoea). To lower the U5 mortality rate further,

the focus on neonatal mortality is key and in the DPRK context that will necessitate more attention on quality of care and health system strengthening. This means for example not just counting the number of ANC visits but checking that those visits were conducted with real quality.

Energy consumption is another topic which is not covered by MICS but which is important in the DPRK context. For example, many houses and even hospitals have connections for electricity but intermittent power. In a country with severe winters, this is a major issue.

