Evaluation of infant death registration in Kyrgyzstan: Lessons learned

Michel Guillot University of Pennsylvania



Study of infant mortality in Kyrgyzstan, in collaboration with National Statistical Committee (NSC) of the Kyrgyz Republic

Main question: impact of the break-up of the Soviet Union on IMR patterns

VR information indicated a continuation of prior declines in IMR after break-





Sources of errors in VR infant mortality data in Kyrgyzstan

VR-based IMR levels too low due to following reasons: Soviet vs. WHO definition of live births vs. stillbirths Undercount of deaths below age 1 (and corresponding births) Age misreporting of deaths (below age 1 vs. age 1 and above) Misattribution of urban/rural residence VR-based IMR by subgroups in Kyrgyzstan

Data sources

- (1) Sample surveys (1997 DHS, 2006 MICS)
- (2) 1989 and 1999 censuses
- (3) Official vital registration data

Sample surveys widely used, but drawbacks due to small sample sizes:

Difficult to detect short-term changes in IMR Difficult to estimate trends for subgroups (urban/rural residence and ethnicity)

Correction using vital registration data

Information on deaths by month of age

Unpublished information obtained from NSC

Calculation of 21q3 the probability that a child who survived to age 3.0 months will die before age 24.0 months

Approach using 21q3

Reported 21q3 unaffected by:

Definition of a live birth vs. stillbirth

Undercount of deaths below 3.0 months and their corresponding births

Age misreporting within ages 3.0-24.0 months

Reported 21q3 still affected by:

Undercount of deaths between ages 3.0-24.0 months

Strong relationship between 21q3 and IMR

Use of relationship to adjust IMR on the basis of reported 21q3

Relationship between IMR and ₂₁q₃



IMR, Kyrgyzstan

Findings

Large underestimation of infant mortality in reported data (confirms and extends DHS results)

Deterioration of quality in the 1990s, improvements in recent years

IMR abruptly stalls in 1991-1999

Reported decline spurious, due to deterioration of VR quality after 1991

IMR resumes its decline after 1999

IMR, Kyrgyzstan, by residence



Findings

No mortality advantage in rural areas

Cross-over spurious, due to larger underestimation in rural areas Larger undercount in rural areas Up to 40% of actual rural deaths are misattributed to urban areas IMR stagnation in the 1990s visible both in urban and rural areas

IMR, Kyrgyzstan, by ethnicity



Findings

No decrease in the gap between Savs and Central Asians Central Asian ethnic groups (Kyrgyz, Uzbeks and Kazakhs) remain more at risk

Larger underestimation among Central Asians

Impact of change of standard for classifying live births

Adoption of WHO standard in 2004 42% increase in reported IMR in 2003 2006 21q3-based IMR estimates should not be affected if premise is true

Relationship between IMR and ₂₁q₃



IMR Kyrgyzstan Final adjustment



Main findings

Contrary to what registration data indicate:

IMR abruptly stalled in Kyrgyzstan following the break-up of the Soviet Union IMR remains higher in rural areas and among Central Asian ethnic groups

Quality of VR data:

Deterioration in the 1990s (esp. in rural areas and among Central Asian ethnic groups)

Improvement since 2004

Reported IMR in 2010 still underestimated by about 11%

Lessons learned

Poor quality of VR registration of infant deaths in Kyrgyzstan was not systematic but concentrated at some ages.

Certain age ranges were of higher quality and could be used to adjust IMR using model age patterns. Approach reproduced direct/indirect estimates well for overlapping years.

Advantages of VR adjustment vs. survey estimates

Detection of time patterns not apparent in survey information (stagnation of IMR following the break-up of the Soviet Union)

More up-to-date information (7 more years of data)

Estimation by sub-group

Adjustment based on locally-produced data; helped with strengthening CRVS

Remaining issues

Model rudimentary, based on only two European populations Worked well in Kyrgyzstan where problems were concentrated at very young ages. How generalizable?

Approach did not address uncertainty around adjusted estimates

Plans for future research and recommendations

Expand model age patterns using a wider range of high-quality data Explore other entry points besides 21q3 that may be more relevant for other data circumstances

Address uncertainty in adjusted estimates

Examine which countries outside FSU region would most benefit from such an approach

Encourage national statistical offices to publish more detailed agespecific information below age 5

NIH R01 research proposal pending

Acknowledgements

National Statistical Committee of the Kyrgyz Republic