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Report

Expert group meeting on death registration systems and mortality statistics in the Arab region Beirut, 15-16 June 2015

Summary

The expert group meeting on death registration systems and mortality statistics in the Arab region was organized in support of a study under preparation by the Statistics Division of the Economic and Social Commission for Western Asia (ESCWA), in partnership with the Regional Office for the Eastern Mediterranean of the World Health Organization (WHO-EMRO). The study focuses on death registration systems and their associated mortality statistics in the Arab region. It aims to provide an overview of the current status of death registration systems in the region and present a demographic assessment of the completeness and quality of death registration data in selected Arab States.

The results of the meeting will feed into the ESCWA study and enrich its analytical and technical foundation. The present report contains an overview of the meeting's discussions and concluding recommendations.

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Introduction

1. The Statistics Division of the Economic and Social Commission for Western Asia (ESCWA) held an expert group meeting at the United Nations House in Beirut, on 15 and 16 June 2015, to discuss a study under preparation by the Statistics Division in partnership with the Regional Office for the Eastern Mediterranean of the World Health Organization (WHO-EMRO). The study focuses on death registration systems and their associated mortality statistics in the Arab region.

2. The meeting brought together experts, researchers and representatives of international agencies and research institutions to undertake the following:

(a) Discuss and seek feedback on preliminary findings on a background study and a technical study that will form the basis of the study on death registration and mortality statistics;

(b) Review the availability of death registration data and complementary data sources on mortality in the Arab region;

(c) Present and review recent research on vital registration systems and mortality estimation from the Arab region, the Asia Pacific region and sub-Saharan Africa;

(d) Exchange current and field-based knowledge on the status of death registration systems in the Arab region, demographic methods to evaluate the completeness and quality of these systems, and methods to estimate summary mortality measures from incomplete and deficient death registration systems;

(e) Facilitate discussions on the methodological challenges of evaluating death registration systems and associated estimation issues for constructing mortality estimates in the Arab region.

I. CONCLUSIONS AND PROPOSALS

3. Experts presented papers and research findings relevant to the study. Ensuing discussions resulted in a set of recommendations, some providing feedback on the study and others providing technical proposals and programme options for improving death registration systems and official mortality statistics in the Arab region.

A. RESEARCH RECOMMENDATIONS

4. Participants welcomed the two components of the draft study by ESCWA and WHO-EMRO on death registration systems and mortality statistics in the Arab region. With regard to the background component of the study, participants noted that the draft study synthesized important contextual information about the nature and evolution of death registration systems in the region. To date, those data had not been integrated into a regional, comparative analysis but rather presented as stand-alone country assessments. The participants recommended closer collaboration between ESCWA and WHO-EMRO in the analysis of the comprehensive assessments, the addition of remaining country assessments into the analysis, and further analysis of the nature of data transfer processes and interministerial coordination.

5. They said that, following the completion of all the civil registration and vital statistics (CRVS) comprehensive assessments in 2016, WHO-EMRO and ESCWA should extend the current analysis to cover the entire region and publish it as a stand-alone report. Such a regional analysis would provide important baseline information to guide future research and evaluation, investments and capacity-building on CRVS.

6. The technical parts of the study on completeness assessment of death registration systems should serve as a model for further data evaluation and methodological development at the regional level, as per the quality assurance standards and assessment methods outlined in the United Nations Principles and

Recommendations on Vital Statistics.[1] In due course, indirect assessment of completeness and quality of death registrations should be complemented by direct assessments employing record linkage techniques.[2]

7. Participants also recommended a number of improvements to the preliminary draft of the technical assessment of death registration completeness and quality, including a detailed exploration of the effect of adjustments to census and register data on the completeness estimates, sensitivity analysis of the potential effects that reporting errors and non-negligible migration have on the completeness estimates, and the inclusion of a detailed overview of current reporting on death registration completeness in the region and the methods used by different reporting agencies.[3] It was noted that such an initiative was complementary to and consistent with the work of the task force on registration coverage being set up by the Global CRVS Group.

B. TECHNICAL AND PROGRAMMATIC RECOMMENDATIONS

8. Investing in CRVS systems is a strategic development option, which must be highlighted as an important policy option. Participants recommended that this be done through the ESCWA Statistical Committee in the context of improving the evidence base in the region for monitoring and evaluation of sustainable development goals.

9. They said that there was a need to build on the current momentum around the regional strategic plan for CRVS improvement, by broadening the coalition of regional partners.

10. They added that the region was complex, with notable variations in social, political and economic issues within countries. There was a need to develop a range of customized techniques, not a pro-forma template for the evaluation of CRVS systems and the scale-up of such systems. ESCWA, WHO-EMRO and the United Nations Population Fund for Arab States (UNFPA-ASRO) should develop a handbook for countries on evaluation and scale-up of CRVS systems, informed by country experiences and customized approaches in the region.

11. Currently, there was limited work on CRVS systems and estimation of mortality for refugee populations experiencing protracted conflict. Participants encouraged ESCWA, WHO-EMRO and UNFPA-ASRO to prioritize work in that area given the ongoing need for vital statistics on refugee populations in the region.

12. A key limitation throughout the region was country-level technical capacity to process, evaluate and adjust population and mortality data and construct estimates of summary mortality measures. Increased support to member States and their national statistical systems, via customized capacity-building and bespoke technical assistance, was necessary to ‘publish what you collect’. The collection of data was done as a public service, so publication of standardized tables was a core function of the statistical system in line with principles of official statistics and principles and recommendations for vital statistics. This support should be framed around calls for a ‘data revolution’ as part of the post-2015 development agenda, so that the regional plan for CRVS improvement was directly aligned with national and regional activities associated with the sustainable development goals.

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[1] See United Nations Statistics Division, Principles and recommendations on vital statistics system, Statistical Papers, Series M. No. 19/Rev. 3, 2013. Available from http://unstats.un.org/unsd/demographic/standmeth/principles/M19Rev3en.pdf. In particular, see chapter I (B) on quality assurance and assessment: standards; and chapter I (D) on quality assessment methods.

[2] Ibid. See chapter I (E) on direct versus indirect assessment; and chapter I (F) on choosing appropriate methods for assessing completeness and qualitative accuracy of registration and register-based vital statistics.

[3] See http://unstats.un.org/UNSD/demographic/CRVS/Global_CRVS_Docs/TOR_2014_Final.pdf.

II. TOPICS OF DISCUSSION

A. Session I: Overview of the situation of death registration and mortality measurement in the Arab region and around the globe

13. Mr. Romesh Silva, an ESCWA statistician, and Ms. Carol Sakr, an independent consultant, presented a preliminary analysis of the evolution and current status of CRVS systems in selected Arab States, namely Egypt, Iraq, Jordan, Kuwait, Lebanon, Morocco, Oman and the Sudan. Their work drew on the following three data sources: a series of rapid CRVS assessments conducted by WHO-EMRO, a series of comprehensive assessments conducted by WHO-EMRO and a report by the United Nations Statistics Divisions.

14. Participants noted that such a regional analysis of comprehensive assessments had not been done before, resulting in a strategic use of the data collected through the comprehensive assessments in the Arab region. However, several participants highlighted the limitations and biases inherent in subjective self-assessments by CRVS country stakeholders. However, it was agreed that analysis of rapid and comprehensive CRVS assessments provided useful data that could complement other evaluations of CRVS systems. Participants from both academic research organizations and different United Nations agencies encouraged WHO-EMRO and ESCWA to further develop the analysis, publish the findings and make the individual comprehensive assessment reports public, so as to facilitate additional and supplementary analyses by a wider network of researchers and analysts.

15. There was discussion about the additional challenges making improving death registration notably more difficult than birth registration. They said that there were often clear incentives for individuals, families and households to register births. However, in low-resource settings and for neonatal and infant deaths, there were not necessarily analogous incentives. Participants discussed ideas of curating and integrating alternative data sources, such as burial record data and administrative information recorded by religious leaders.

B. Session II: Comparative civil registration and vital statistic experiences from the Asia Pacific region and sub-Saharan Africa

16. Ms. Tanja Sejersen, associate statistician at Economic and Social Commission for Asia and the Pacific (ESCAP), presented the programme of activities for the Asia Pacific CRVS decade 2015-2024. She highlighted the challenges facing countries, such as poor coordination; inadequate financial and human resources; lack of public awareness of the importance of registering life events; inadequate training and capacity for certifying causes of death and coding of causes; and weak legal frameworks and implementation. She said that, in the Asia Pacific region, member States had made high-level commitments to universal civil registration of births, deaths and other vital events by 2024. The steps for implementing those commitments were as follows: establishing a national coordination mechanism; conducting a comprehensive assessment; setting national target values; developing and implementing plans for monitoring and reporting; assessing subgroup inequalities; developing and implementing multi-sectoral national CRVS strategy; assigning a national focal point; and reporting relevant information to ESCAP. She added that specific challenges lay ahead in terms of assisting countries with baseline data; continuing momentum; partnership alignment; resources; and specific political issues such as migration.

17. Ms. Carla AbouZahr, Chief Executive Officer at CAZ Consulting, presented a background paper describing current global efforts to strengthen CRVS systems in the run-up to the post-2015 development agenda. She emphasized the importance for countries to use CRVS to generate mortality and causes of death statistics that met the quality criteria of being representative, continuous, timely, detailed, accurate and disaggregated, and that were underpinned by operational seamlessness between national statistical offices, civil registration offices, health ministries and other relevant ministries. She added that the only way to fully understand how rapidly and what parts of the population were being affected by diseases and their risk

factors, in a sustainable way, was through fully functioning civil registration and vital statistic systems with correct medical certification of every cause of death.

18. She noted the following key prerequisites for successful CRVS improvement: high level political commitment to create non-discriminatory civil registration; actions to build trust across communities; long-term vision and willingness to direct national and donor resources to CRVS; alignment around global standards for CRVS; transparency, sharing of vital statistics and efficient policies; and accountability mechanisms. She emphasized the need for integrating CRVS improvements into global and regional development strategies, and the critical role of United Nations regional commissions and WHO regional offices.

19. Mr. Luay Shabaneh, Regional Advisor at UNFPA, gave an overview of recent UNFPA work in improving CRVS systems and maternal mortality measurement in the region. He provided a broad overview of the various data sources used for maternal mortality measurement in the region, a description of underreporting and misclassification errors associated with maternal mortality data, and case studies of two validation exercises in Iraq and Palestine. He directly linked CRVS improvements to the post-2015 development agenda and said that United Nations agencies should link CRVS improvements to the 2020 round of population censuses, given the centrality of CRVS systems and population censuses in national statistical systems.

20. Mr. Patrick Gerland, Chief of the Mortality Section at the United Nations Population Division (UNPD), provided a detailed overview of the Division's work on assessing data and estimating population and mortality levels and trends, as part of its recurring publication entitled *World Population Prospects*. He said that the Division's analytical work relied on standard tabulations, but often not all that information was available, especially in a form and at a level of disaggregation that facilitated demographic estimation and analysis. After describing various internal and external data validation checks, he then described the Division's iterative estimation process for fertility, mortality and migration based on available vital registration, census and survey data. He concluded by describing the Division's three-pronged research plan that involved constructing a comprehensive data inventory of primary sources for each country, assembling and maintaining a user-friendly archive of data and metadata for all available data sources, and a Bayesian modelling of uncertainty in mortality and population estimates incorporating expert opinion.

21. Ms. Anneke Schmider, CRVS Coordinator at WHO, reviewed recent regional initiatives in sub-Saharan Africa and the Asia Pacific region. She said that both of those regions had been successful in securing high-level political support for CRVS. The Arab region was notably different to sub-Saharan Africa and the Asia Pacific region; while other regional efforts were informative, it was unlikely that they could simply be "copied and pasted" in the Arab region. She highlighted the need for improved evaluation methods of death registration systems and the challenges of CRVS and mortality measurement in conflict-affected countries and States with large flows of economic migrants, which had received limited attention thus providing an opportunity for the region to advance methodology and practice in those areas.

C. Session III: Lessons learned from assessing death registration in Madagascar and Kyrgyzstan

22. Mr. Bruno Masquelier, Assistant Professor at the Catholic University of Louvain, presented lessons learned from a project that used death registration data to analyse mortality transition in the capital of Madagascar, Antananarivo. His analysis synthesized cause of death information with demographic analysis of the death registration system to show that the temporal trend in mortality decline was driven by substantial reductions in child mortality and modest reductions in adult mortality associated with infectious diseases and respiratory ailments.

23. Mr. Michel Guillot, Professor at the University of Pennsylvania, presented an analysis of levels and trends in infant mortality in Kyrgyzstan before and after the break-up of the Soviet Union. He identified the

principal errors in childhood death registration data, including differences in the definition of live births versus stillbirths; an undercount of deaths below age one; underreporting of mortality below age three months; heaping of reported ages at death (below age one versus age one and above); and misattribution of urban/rural residence. He presented adjusted infant mortality rate estimates modelled using a model based on the probability of dying between the ages of 3 months and 24 months from the civil registration system.

24. Participants discussed the importance of evaluating death registration systems at the subnational level and the utility in improved measurement of the age pattern of child mortality. With regard to Mr. Masquelier's presentation, there was a general discussion on the importance of supporting countries in using data from their registration systems for capital cities and urban areas where registration completeness was higher than for rural areas. However, it was agreed that this would require considerable and sustained capacity-building of data analysis capacity within national statistical offices and civil registries. In relation to Mr. Guillot's presentation, participants noted the importance of detailed data quality assessment and context-specific adjustments to death registration data based on errors and biases in the raw data.

D. Session IV: Analysis and assessment of mortality data in the Arab region

25. Mr. Silva presented a preliminary assessment of the completeness and quality of death registration systems in Bahrain, Egypt, Kuwait and Palestine. He first provided an overview of the available census data and death registration data in those four countries, then discussed the application of the following three death distribution methods: the generalized growth balance method, the synthetic extinct generations method and the adjusted synthetic extinct generations method. He said that the application of those methods was constrained by data quality issues with the available census data and death registration data. Further investigation was needed to explore the effect of different data adjustments on estimates of death registration completeness.

26. Mr. Masquelier welcomed the preliminary study and discussed the importance of demographic data quality assessment and death registration completeness estimates. He noted that the published literature lacked systematic studies of completeness and quality of death registration across geographic regions. He recommended expanding the presentation of demographic data quality assessment in the preliminary study and extending the analysis by carrying out sensitivity analysis to better understand the effect of reporting errors and migration on the robustness of completeness estimates and associated adult mortality estimates.

27. Mr. Gerland recalled that the main evaluation methods for death registration systems recommended in the United Nations Principles on Vital Statistics included both death distribution methods and record linkage studies.[4] Death distribution methods and demographic data quality assessment were important preliminary assessment methods but validation studies drawing recent advances in record linkage methods were also necessary.

28. Mr. Mohamed Ali, Health Information and Statistics Coordinator at WHO, reviewed levels and trends in routine reporting of cause of death data by member States to WHO-EMRO, the distribution of causes of death across member States and the levels and trends in reporting of ill-defined causes of death. He noted several data quality issues with cause of death data in death registration systems, problems with the design of death certificates in some countries and the general paucity of skilled and experienced coders.

29. Mr. Guillot discussed the importance of validation studies in enhancing understanding of the quality of cause of death data in death registration systems. He noted the importance of accuracy, completeness and timeliness to comprehensively evaluate cause of death data.

[4] Ibid., paras. 617-618.

30. Participants discussed some different approaches to validation studies of cause of death data, the methodological challenge of redistributing ill-defined codes and the importance of publishing cause of death data by countries and WHO. Participants affirmed the importance of synthesizing multiple sources of data to advance vital statistics in countries with civil registration systems that were incomplete or deficient.

E. Session V: Evaluating death registration using incomplete registration systems

31. Mr. Guillot presented research developed jointly with Mr. Gerland and colleagues at UNPD. He said that the project had identified important deviations from model life table patterns of child mortality, measured as the probability of dying between an individual's first and fifth birthday, relative to infant mortality, measured as the probability of dying before an individual's first birthday. Those findings underlined the importance of data quality assessment of survey data and vital registration data in accurately decomposing under-five mortality into infant and child morality components.

32. Complete information on childhood deaths was also pointed out as helpful. Accurate measurement of infant mortality rates was important, as most of under-five mortality in the region occured in the first month or first year of life. Yet, coarse models were often used to estimate infant mortality rates on the basis of the probability of dying between birth and age five. Existing models, such as the Coale-Demeny and United Nations Model Life Tables, did not cover the full range of mortality experiences in the world.

33. Mr. Masquelier noted that the practice of the United Nations Interagency Group on Mortality Estimation (IGME) for choosing life tables when estimating infant mortality rates varied. However, the IGME practice did rely heavily on West model life tables. He acknowledged the importance of using the age range for which reliable data was available, but queried how to deal with changes in a country's mortality experience over time. He also noted that child deaths continued to decrease and therefore were increasingly a smaller proportion of the mortality burden.

F. Session VI: Registration, data quality assessment and mortality analysis for conflict-affected populations

34. Mr. Jon Pedersen, Research Coordinator at the Fafo Research Foundation, presented experiences from various efforts by Fafo in the Middle East in measuring excess mortality attributable to armed conflict. He noted that active registration/surveillance in conflict situations rarely provided reliable death counts by age and sex, as information systems were themselves affected by the conflict; Palestine might be one of the few exceptions to that phenomenon. Thus, CRVS systems, and other contemporaneous registration and reporting systems, were unlikely to provide a strong basis for mortality estimation for conflict-affected populations. There was therefore a heavy reliance on survey-based approaches in such settings.

35. He concluded that there was strong evidence that small surveys in conflict-affected settings were of little or no value, but noted that large surveys involved considerable expense. He highlighted the perils of cluster sampling by showing results from Darfur, but also noted that designing alternative sampling schemes that could effectively measure both combatant and non-combatant deaths remained a serious challenge.

36. Mr. Ali presented a number of lessons learned from his work on conducting large conflict mortality surveys in Afghanistan and Iraq. He noted that constructing a sampling frame for the Iraq Family Health Survey was particularly difficult, given the nature of the violence and the prevailing security situation during the time of the study. He discussed the operational and budget challenges of training large field teams outside the country and the survey fieldwork issues when security and safety conditions were continuously changing. One major lesson learned from his own work was that there was often a tendency for researchers to design lengthy survey questionnaires that were cumbersome to administer in the field and yielded low data quality. He recommended a synthesis of recent lessons learned from conflict surveys and the development of a toolkit for survey field researchers working in conflict zones and post-conflict situations.

37. Mr. Masquelier presented preliminary analysis of registration data by the United Nations High Commissioner for Refugees (UNHCR). The objectives were to provide a description of the UNHCR registration process and to assess whether the completeness of birth and death registration data collected by UNHCR were consistent with the mortality patterns of the surrounding area.

38. He said that UNHCR registration data cover changes in the refugee population, including births, deaths, new arrivals and departures. There were three main providers of data for the UNHCR ProGress Database: governmental agencies, UNHCR field offices and non-governmental organizations. The Database was used by UNHCR around the world in more than 300 refugee camps to track the process of refugee applications, issue identification cards, record addresses for those living outside camps and document personal details of refugees.

39. Since 2006, UNHCR had developed and maintained a health information system database to monitor refugee public health in camp and urban settings. However, only two ESCWA member States, namely Yemen (three camps) and the Sudan (seven camps), were covered in that database. The age information was crude, disaggregating deaths into under-five and over-five deaths only, and the cause of death information was coarse, limited to a small set of causes of death, including neonatal death, tuberculosis, injury, lower respiratory tract infections, cardiovascular disorders, bloody diarrhoea, watery diarrhoea, chronic obstructive pulmonary disease, cancer, ischemic heart disease, malaria, measles, meningitis, AIDS, maternal death and acute malnutrition.

40. Mr. Gerland commented on the presentations of conflict mortality surveys and highlighted the need for such surveys and their associated analyses to factor in the substantial and complicated migration side of conflict situations. He noted that the type of survey respondent could lead to reporting biases depending on the type of conflict. He also raised the issue of recall errors associated with retrospective surveys and the fuzziness of indirect methods in locating vital events in calendar time. He recalled survey work conducted by Charlie Hirschman in Viet Nam, where the astrological calendar was used to get precise info about dates of birth and dates of death and thus reduced recall effects and biases.[5]

41. In the ensuing discussion, participants agreed that, during conflict and immediately after conflict, traditional registration and reporting systems were not reliable stand-alone sources for the estimation of mortality. It was therefore likely that there would be continued reliance on survey methods. However, there was a need for refinement of survey methodology and survey practice based on recent lessons learned from the field. There was also a need to explore the possibilities of data integration of multiple data sources during and after conflict, including mortality surveys, incomplete administrative records and registers, burial records and mortuary records, as well as passive surveillance sources, including media reports and documentation compiled by human rights and humanitarian non-governmental organizations. It was noted that, although Health Information System (HIS) data collected by UNHCR did not have wide coverage in the Arab region, UNHCR registration data were still a valuable source of information to support improved modelling of refugee stocks and flows during and after conflict.

G. Session VII: Open discussion on next steps in advancing death registration and mortality estimation in the Arab region

42. The discussion in this session has been documented in paragraphs 4-13 of the present report.

[5] Charles Hirschman and others, Vietnamese casualties during the American war: a new estimate, in *Population and Development Review*, vol. 21, No. 4, pp. 783-812, 1995; and M.G, Merli, Socioeconomic background and war mortality during Vietnam's wars, in *Demography*, vol. 37, No. 1, pp. 1-15, 2000.

III. ORGANIZATION OF WORK

A. Date and venue of the meeting

43. The meeting was held at the United Nations House in Beirut, on 15 and 16 June 2015.

B. Attendance

44. The meeting brought together experts, researchers and representatives of international agencies and research institutions in the field of civil registration and vital statistic systems and the research team preparing the study on death registration systems. The list of participants in set out in the annex to the present report.

C. Opening

45. Mr. Marwan Khawaja, Chief of the ESCWA Demographic and Social Statistics Section, opened the meeting by saying that the study had come at a time in which there was renewed interest in the improvement of CRVS systems and appreciation for the central importance of such systems in the production of high-quality vital statistics. However, he noted the paucity of demographic assessments of CRVS systems, in general, and death registrations, in particular, to guide CRVS scale-up plans in the Arab region. He also noted the considerable contextual challenges and the capacity constraints in the region. The region continued to be affected by protracted conflict which, in turn, posed a number of challenges for the CRVS systems of countries experiencing conflict and those receiving large flows of displaced persons because of conflict. Parts of the region had large and complex flows of labour migrants in and out of their territories that made complete registration of vital events difficult and also posed considerable challenges to the assessment of registration completeness.

46. Mr. Silva emphasized the following three priority areas for the meeting and the associated study: the review of available death registration data from selected countries; the applicability of demographic methods to assess the completeness and quality of those data; and identification of possibilities for customizing or extending such methods to the situation in the region.

47. Mr. Ali welcomed the meeting and the study on death registration systems. He noted that the programme of work was an important part of the regional strategy for CRVS improvement and scale-up in the region jointly developed by WHO-EMRO, ESCWA and the United Nations Population Fund.

Annex*

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