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Population Division
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United Nations expert group meeting on the evaluation of adolescent fertility data and estimates

New York, 26-27 October 2020

(Virtual meeting)

Report of the meeting

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EXPLANATORY NOTES

Symbols of United Nations documents are composed of capital letters combined with figures.

The following abbreviations are used in the report:

ABR	Adolescent birth rate
ASFR	Age-specific fertility rate
CELADE	Centro Latinoamericano de Demografia (Population Division, Economic Commission for Latin America and the Caribbean)
CENEP	Centro de Estudios de Población
COVID-19	Coronavirus disease
CRVS	Civil registration and vital statistics
DHS	Demographic and Health Surveys
ECLAC	Economic Commission for Latin America and the Caribbean
GBD	Global Burden of Disease
HDSS	Health and Demographic Surveillance Sites
I-DEMO	Institute of Demographic and Life Course Studies
ICF	Inner City Fund
IDRC	International Development Research Centre
INECV	Institute Nacional de Estatistical Cabo Verde
MICS	Multiple Indicator Cluster Surveys
NSO	National Statistical Office
PAPFAM	Pan Arab Project for Family Health
RHS	Reproductive Health Surveys
UN DESA	United Nations Department of Economic and Social Affairs
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
WFS	World Fertility Survey
WHO	World Health Organization

I. BACKGROUND AND SCOPE OF THE MEETING

The 2030 Agenda for Sustainable Development, adopted by the General Assembly in September 2015, includes as one of its targets "By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes" (target 3.7).[1] Subsequently, the global indicator framework for the Sustainable Development Goals (SDGs) specified the indicators of the goals and targets, including indicator 3.7.2, "Adolescent birth rate (aged 10–14 years; aged 15–19 years) per 1,000 women in that age group".[2] The Population Division of the Department of Economic and Social Affairs, the custodian agency for indicator 3.7.2, develops and recommends international standards and methodologies for monitoring this indicator. Additionally, the Population Division compiles country data and metadata and estimates regional and global aggregates for inclusion in the Global SDG Indicators Database[3] and contributes to the annual Sustainable Development Goals Report. The Division has, so far, only reported on adolescent fertility for women aged 15–19 years. In order to explore the measurement and future reporting on early adolescent fertility (at ages 10-14 years), the Population Division organised an expert group meeting to evaluate adolescent fertility data and estimates from 26 to 27 October 2020.

The expert group meeting convened experts from United Nations agencies and research institutions as well as data producers to assess the coverage, accuracy and consistency of national data and estimates related to early adolescent fertility among girls under the age of 15 years. The experts also reviewed various variables associated with early adolescent fertility that could be used to assess the accuracy of the data and estimates of this indicator. The meeting further discussed the applicability of the approach currently used by the Population Division to select the values of the adolescent birth rate for young women aged 15-19 years to the birth rate of girls aged 10-14 years. Lastly, the meeting considered model-based approaches that are consistent with standard scientific methods applied for reporting on other SDG indicators, such as maternal or child mortality, to report on the indicator at country level.

Due to the pandemic, the expert group meeting was held virtually. This meeting of two half-day sessions was organized as panel discussions around selected themes addressing data sources, methods to estimate early adolescent fertility data and approaches for data validation and selection for SDG reporting and analysis. This report summarizes the presentations and discussions that took place within each session of the meeting and the conclusions and recommendations put forth.

[1] General Assembly resolution 70/1. Transforming our world: the 2030 Agenda for Sustainable Development.
[2] General Assembly resolution 71/313. Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development.
[3] https://unstats.un.org/sdgs/indicators/database/

II. SUMMARY OF SESSIONS

A. Opening

Mr. John Wilmoth, Director of the Population Division, opened the meeting by welcoming the participants. He provided a brief overview of the work of the Division, its role as the custodian agency for SDG indicator 3.7.2, and of the implications of early adolescent fertility on the health, well-being and economic opportunities of young women and girls. The inclusion of adolescent girls aged 10-14 in the indicator framework of the Sustainable Development Goals (SDGs) reflected the increased interest in filling the knowledge gap on childbearing among young adolescents. SDG 3, which aims to "ensure healthy lives and promote well-being for all at all ages", includes target 3.7 on universal access to sexual and reproductive health-care services. As one measure of progress towards this target, indicator 3.7.2 was defined as the adolescent birth rate (aged 10–14 years; aged 15–19 years) per 1,000 women in that age group.[4] The Director outlined the objectives of the meeting and welcomed the participants.

B. Setting the Stage: Reporting on the Adolescent Birth Rate in the Context of the SDGs

This session provided an overview of the work of the Division on monitoring and reporting of SDG indicator 3.7.2 and related work in the context of the population estimates and projections prepared by the Population Division.

Ms. Karoline Schmid, Chief of the Fertility and Population Ageing Section, presented the latest levels and trends in early childbearing. In reviewing the current state of knowledge, early adolescent fertility was often positively associated with early marriage and, in most countries, with high fertility in later adolescence (15-19 years), higher total fertility levels, and higher population growth rates. She highlighted some methodological challenges involved in reporting on adolescent fertility in the context of the SDG monitoring. Reporting on SDGs was overseen by the Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs), a group composed of representatives from Member States with international agencies as observers. Specifically, the IAEG-SDGs approved guidelines on reporting mechanisms and monitored the application of harmonized and agreed definitions. These guidelines requested the selection and reporting of one data point per country per reference year and the prioritization of national data approved by national statistical systems. While the Division had so far reported only on adolescent fertility of young women aged 15-19 years, the SDG Indicator Framework also called for reporting on adolescent fertility under age 15.

The most recent estimates, referring to the period 2010-2017, indicated that fertility between ages 10 and 14 years was much more common in sub-Saharan Africa and Latin America and the Caribbean than in other parts of the world. Elevated levels of early adolescent fertility of 6 or more births per 1,000 girls were observed in 11 countries in sub-Saharan Africa (Angola, Cameroon, Chad, Gabon, Guinea, Madagascar, Mali, Mozambique, Niger, Nigeria and Sierra Leone) and in Bangladesh. Moderate levels of one to five births per 1,000 girls were observed in 49 countries in sub-Saharan Africa, three in Asia (Nepal, Myanmar and Yemen), two in Europe (Bulgaria and Romania) and 20 in Latin America and the Caribbean. In 89 countries, low levels of early adolescent fertility of less than one birth per 1,000 girls were observed mostly in Europe and Northern America. Most countries with elevated levels of early adolescent fertility recorded a reduction from 2000-2007 to 2010-2017.

[4] Data and meta data for this indicator are available at https://unstats.un.org/sdgs/indicators/database/. However, no data on adolescent birth rates of girls aged 10-14 have been reported or published in the global SDG repository or reports to date.

Mr. Patrick Gerland, Chief, Estimates and Projections Section, and Ms. Giulia Gonnella, Population Division, made a presentation on estimating age-specific fertility patterns during the period 1950 to 2020 in the context of World Population Prospects (WPP). The presenters discussed key concepts, data requirements, data sources and methods of estimation. Plans to upgrade the production of demographic estimates and projections for WPP by single year and single age were discussed. The Division had developed a model for estimating early adolescent fertility among girls aged 10 to 14 years by single year of age, based on more than 4,500 data series on early adolescent fertility by single year of age drawn from vital registrations, household surveys, and health and demographic surveillance systems for 171 countries from around 1950 to 2019. The model also produced fertility patterns by single year of age when data were available for five-year age groups only. The model worked well across different regions and time periods, and with different shapes of fertility distributions by age. The model provided reasonably accurate estimates of fertility at old ages (50+ years).

Mr. Stephen Kisambira, Population Division, presented the key points of the background paper prepared for the meeting.[5] The Division had a long history of analyzing fertility. Whereas fertility levels among women aged 15-19 years were available for almost all countries and areas in the world, the Division had only recently begun to examine the available data on childbearing among girls aged 10-14 years. He provided an overview of available data sources. He illustrated the internal procedure for selecting the most appropriate estimate of the adolescent birth rate among women aged 15-19 years for the purpose of SDG monitoring and reporting for each country and year and discussed the challenges in selecting only one value from a wide range of available country data. The presentation included an assessment of the levels of early adolescent fertility (10-14 years) and later adolescent fertility (15-19 years), by matching either the data source, the reference year or both for both fertility rates. He suggested basing the selection of the appropriate estimated birth rates for girls at ages 10–14 for each year on the same criteria as used for the adolescent birth rate among women aged 15-19 when the data source for both rates was the same. In case data points were not available from the same source, they could be drawn from different sources if the time trends of both indicators were sufficiently similar.

Participants discussed possible inferences about birth rates at ages 15-19 as they may apply to under-15 birth rates as well as the most useful types of age disaggregation and grouping, including using non-conventional age-groups such as 12-14 years of age or presenting birth rates by single year of age. Participants noted the difficulties of collecting data on childbearing among under 15-year-old girls in household surveys. Laws on the age of consent and conventions prevented the collection of sensitive data from interviewees below age 15. In countries or areas where registration data were deficient, estimates of early adolescent fertility based on retrospective birth histories suffered from age heaping at age 14, which could lead to overestimating fertility at ages below 15 years.[6] Further, it was also possible that some girls who had a birth at age 14 might report their age to be 15 years or older to avoid stigmatism. Also, adolescents may align their answers to standards of social desirability and might therefore provide responses they deem to be more socially acceptable instead of truthful. One way to reduce underreporting would be to select survey respondents by interviewing all girls and women in a household who had had at least one live birth, instead of selecting the interviewees based on their age alone. Research had shown that women aged 20-24 years, who might have misreported childbearing during previous interviews were more likely than women aged 15-19 years to report births that occurred when they were below age 15. Birth history data from women aged 20-24 years could thus be useful to estimate fertility at ages 10-14 years and

[5] Available from https://www.un.org/development/desa/pd/events/EGM-on-the-evaluation-of-adolescent-fertility-data-estimates-for-SDG-reporting

[6] Interviewers may classify respondents aged 15 or 16 years as under 15-years-olds to avoid conducting a longer version of the questionnaire.

to assess possible underreporting of births at those ages by adolescents aged 15-19 from birth history data from the latter. The disadvantage of this approach would be that the reference years for estimates from older women would be further removed from the survey date, increasing the risk of recall bias.

Participants also discussed the most appropriate denominator, or population at risk, when estimating fertility under age 15, considering that childbearing very rarely occurs at ages 10 or 11 years. Some participants suggested narrowing the age group to 13-14 years or 12-14 years instead of 10-14 years. The discussion also clarified that estimates of under-15 fertility based on the DHS data pertained to girls aged 12 to 14 years, since fertility estimates for girls aged 10-14 are obtained from retrospective birth histories of girls aged 15, 16 and 17 years for the three years before the survey. The use of single years of age in calculating early adolescent birth rates was also suggested.

C. Data and Estimates from Various Data Sources on Adolescent Fertility

The second session discussed the main data sources for the adolescent birth rate (ABR) and methods for estimating adolescent fertility and related indicators using different data sources.

Mr. Bruno Schoumaker, Catholic University of Leuven, presented estimates of fertility of adolescents aged 10-14 years that are based on birth histories from 455 household surveys covering 107 countries. Demographic and Health Surveys (DHS) accounted for over half of the surveys used for this work.[7] He provided a detailed description of the methods of estimation methods and the challenges he had encountered concerning the quality of data. Key issues affecting the quality and accuracy of the estimates included misreporting of the women's age, omissions of neonatal deaths, misreporting of children's birth dates, sample selection of survivors, exclusion of unmarried women from surveys, and sampling errors. He also compared his estimates of early adolescent fertility with those obtained from other sources, including estimates in the Global Burden of Disease (GBD) database, direct and indirect estimates derived from population censuses and those obtained from health and demographic surveillance sites (HDSS). He concluded from his research that sufficient data were available to estimate long-term trends in early adolescent fertility. He also found that estimates were rather consistent across surveys and that early adolescent fertility had declined globally. Further, his estimates were consistent with estimates derived from other surveys, such as HDSS and population censuses. Further work was needed to compare the estimates with civil registration and vital statistics (CRVS), where available. Comparing his estimates with modelled estimates derived from the GBD database, he found the GBD estimates to be inconsistent with estimates derived from other sources and therefore rather unrealistic. Mr. Schoumaker was optimistic about the possibility to estimate long-term trends for under-15 fertility given that the data, while available, remained untapped. Some new indicators could be used, for example, by using widely available data on "children ever born" from population censuses. More research would be needed to get a better understanding of the degree of underestimation of under-15 fertility rates and to monitor the changes in the fertility rates of young adolescents aged 10-14.

During the discussion it was observed that many observations or estimates fell outside of the 95 percentage confidence bands. Considering that the width of a confidence interval provides an indication of the precision of the measurement, large sample sizes tended to yield high levels of precision and narrow confidence intervals. Mr. Schoumaker noted that narrow confidence intervals for countries such as Bangladesh, which had plenty of data from many surveys, were not surprising. One consideration was that

[7] Other survey programmes include the World Fertility Survey (WFS), Multiple Indicator Cluster Surveys (MICS), Reproductive Health Surveys (RHS) and Pan Arab Project for Family Health PAPFAM).

the confidence intervals would be wider if they reflected the uncertainty due to misreporting of women's age. Mr. Schoumaker responded that he found some under-estimation due to age misreporting but that, for most countries, the long-term trends in under-15 fertility estimates were fairly consistent. Another question was whether Mr. Schoumaker had performed consistency checks by comparing under-15 fertility rates with the total fertility rate or with the adolescent birth rate (15-19). While he had not done so, he considered that such consistency checks could be useful in evaluating levels and trends in under-15 fertility estimates.

Ms. Adriana Skenderi, Statistics Division, presented an overview of the Demographic Yearbook System maintained by the Statistics Division of UN DESA, a portal for compiling and publishing demographic data, mainly from population and housing censuses as well as from CRVS, received from national statistical offices. The collection does not include any data from household surveys. Each year, the Statistics Division collects from Member States data on the number of live births by age of the mother and sex of the child using a vital statistics questionnaire. On average, it takes about six months for countries to complete and return the questionnaire. About 100 countries provide the number of live births annually. The number of live births is tabulated by year of occurrence and year of registration. For the reference years 1948 to 1986, data on live births by sex of the child are available only for mothers under the age of 15 without any further breakdown by age. Data on live births by sex of the child and age of the mother aged 10 to 14 years has become available since 1987, while the numbers of live births by sex of the child and by single year of age of the mother (12, 13 and 14 years) became available since 1991. Before the mid-1980s, the number of countries reporting on the number of live births to mothers aged 15 to 19 years and those aged under 15 years were similar. From 2010 to 2018, 143 countries reported at least one data point of live births by mothers under age 15 years, compared to 156 countries that provided at least one data point for births among women aged 15 to 19 years. Ms. Skenderi clarified that, with regard to vital statistics, the Demographic Yearbook only collected and published data on the absolute number of events, the number of births in this case, not on rates. With the help of these data, users could make their own calculations of birth rates, including any pertinent adjustments.

Ms. Sarah Neal, University of Southampton, shared the findings from a study that examined the consistency across DHS surveys in the reporting of age of sexual initiation, marriage and first birth when they occur during adolescence, particularly at ages 15 and 16 years. The study had used data from DHS surveys conducted five years apart in six African countries and in three countries in Latin America and the Caribbean. The five-year interval between surveys allowed her to obtain the information on fertility reported by the same cohort of women from one survey to the other and to examine the consistency of such information. The findings of this study showed that the proportion of older women aged 20 to 24 years who reported giving birth before the age of 15 and 16 years was markedly higher, by at least 50 per cent, than the proportion that the same cohort reported when they were 15 to 19 years old. However, the differences were smaller in the reporting of the births they had before the age of 19 years. Early adolescent fertility was found to be most concentrated among the poorest and rural populations and was considered to be an indication of abuse, coercion and a violation of the rights of girls. Possible reasons for the significantly lower estimates of under-15 and under-16 fertility reported by the same cohort when they were younger, at ages 15 to 19 years, include bias to respond in accordance with standards of social desirability, sampling errors, and overstatement of age of married adolescents or adolescent mothers at the time of survey. The study found little evidence of heaping of the reporting of births at ages 15 or 16 years. These research findings suggest that estimating under-15 fertility rates from respondents aged 15 to 19 years may underestimate early adolescent fertility. Instead, using data collected from older women aged 20 to 24 years could produce more reliable results. Also, using estimates from the most recent period, for example three

years before the survey to assess the trends in under-15 fertility rates, could lead to the false impression of reductions in early adolescent fertility in recent years.

Ms. Clementine Rossier, University of Geneva, shared her work on adolescent fertility (15-19 years) based on HDSS data in African countries. She based her research on data collected from 10 HDSS sites, which were generally located in poorer and more remote areas of six African countries that were also covered by the most recent DHS surveys. She highlighted the benefits of the HDSS surveillance sites, which allowed for surveying the same people and households annually over a longer period of time. Her research found that while adolescent fertility had declined globally over the last 50 years, it had remained remarkably higher in sub-Saharan Africa than in other parts of the world. She had examined whether the estimates of the adolescent birth rate (15-19 years) based on the HDSS data were comparable to those derived from DHS. She also sought to determine whether data on the adolescent birth rate (ABR) derived from HDSS data could serve as a basis for benchmarking other reproductive health indicators in a similar way as DHSS mortality data were already used to assess the quality of mortality data collected from censuses. She pointed out that it was difficult to compare ABR data derived from HDSS sites with those derived from DHS surveys, since the geographical coverage of HDSS surveys is much more limited than the area covered by a DHS survey. She had applied the education distribution of the DHS data to the HDSS data to compute standardized surveillance ABR data. The standardized ABR estimates showed that the ABRs in rural areas were, on average, about 44 per cent lower at HDSS sites than in the corresponding DHS region.[8] However, excluding temporarily absent rural residents from the HDSS surveys yielded ABRs of resident adolescents which were similar to the ABRs derived from DHS data. The ABRs derived from the DHS matched the HDSS estimates in the only urban site involved in this study. In concluding her presentation, Ms. Rossier remarked on the limitations of the methods and data used in her study. A more robust comparison would be needed to confirm her findings. New survey approaches at local HDSS sites could be tested to routinely collect socio-demographic variables in order to assess the effects of factors such as social desirability bias on ABR estimates. Ms. Rossier mentioned the challenges of managing several HDSS sites simultaneously given the limited resources available.

During the discussion, participants sought clarifications about confidence intervals, shifts in age reporting, and reference periods for estimating adolescent fertility rates. On the issue of narrow bands of the confidence intervals around the estimates, Mr. Schoumaker responded that in general this should not be an issue, given the large number of estimates from different surveys that were included in the analysis. However, more work could be done to take into consideration some uncertainties related to data quality, particularly with regard to the misreporting of age in surveys. The model could be calibrated to provide more realistic confidence intervals by considering other measurement issues, such as under-reporting of neonatal births and the removal of outliers.

Participants provided suggestions on how to improve the calculation of the adolescent birth rates by using existing methods. Regarding the Lexis approach that Mr. Schoumaker used, it was suggested to adjust the modelled estimates based on the age group 12 to 14 years by a factor of 0.6 to obtain estimates for the age group 10 to 14 years, based on the well-grounded assumption that girls below age 12 very rarely become pregnant and bear children.

[8] Both datasets use the same definition of residence.

Participants also suggested considering additional variables that reflect country-specific circumstances to assess the quality of adolescent birth rates. For example, in Latin American countries and some African countries, adolescent fertility was linked to rape and coerced sex rather than early marriage. In countries where early marriage and childbearing were common and acceptable, early marriage could be used to validate the levels and trends in adolescent birth rates, since early marriage and early fertility tended to follow similar patterns. Further, removing girls who are not yet physically able of giving birth from the calculations would improve the estimates for the pertinent age groups, that is, girls aged 12 to 14 or 13 to 14 years. Analysts could undertake consistency checks for a larger number of countries by comparing under-15 fertility rates and fertility rates of women in other age groups, for example young women aged 15 to 19 and 20 to 24 years.

Participants also discussed discrepancies between the estimates from HDSS and from DHS surveys. While the estimates from the HDSS and DHS surveys were largely of the same order of magnitude, it was important to remember that the former did not represent the entire country because the HDSS data generally covered only a small, often rural, area. Because the surveillance sites could have been exposed to interventions altering local behaviour, HDSS-based estimates would not yield a good proxy for estimates at regional or country level.

D. Adolescent Fertility: Regional and National Perspectives

This session offered insights into the assessment and use of available data and estimates on adolescent fertility and related sexual and reproductive health indicators from a regional and national perspective. Presenters shared experiences and challenges in working with various data sources on adolescent fertility, sexual and reproductive health indicators, and related variables for monitoring, reporting and providing policy advice at the regional and national levels.

Mr. Jorge Rodriguez Vignoli, United Nations Economic Commission for Latin America and the Caribbean (ECLAC), made a presentation on adolescent fertility in Latin America and the Caribbean. In this region, vital statistics were the main source of data for estimating fertility below age 15. However, not all countries in the region had sufficiently complete or accurate vital registration systems. Challenges included late birth registration, missing data on the characteristics of parents and, sometimes, dearth of data on fertility of girls aged 10 to 14 years. Estimating early adolescent fertility for specific ethnic groups, poorer segments of society or small areas could be particularly challenging. Some Latin American and Caribbean countries administered household surveys similar to the DHS, complementing their vital statistics. However, surveys had their limitations, such as wide confidence intervals of estimates based on infrequent events (e.g., births before the age of 15 years) or national representativeness. Since surveys were usually conducted at intervals that were several years apart, usually every five years, they could complement vital statistics systems only to a limited extent. Also, girls under age 15 were typically not interviewed in these surveys. The presenter suggested that censuses could be another source of data in Latin America and the Caribbean, as they collect data on childbearing, although rarely on childbearing below age 15. Censuses that have collected such data usually cover the age group 12 to 14 years. Census data are useful for both direct estimates (e.g., based on births during the last 12 months) and indirect estimation (based on data on children ever born), as well as for disaggregation by various variables. The presenter highlighted, at the same time, the challenges caused by the COVID-19 pandemic, including delays in the implementation of the (current) 2020 census round in Latin American and Caribbean countries.

Mr. Rodriguez provided an overview of trends in adolescent fertility in the region, beginning with the 1960s, when the adolescent birth rates (15-19 years) were higher than in other regions of the world. While total fertility rates had been declining in all Latin American and Caribbean countries over the past decades, adolescent fertility rates were declining only in some of them, while in most countries, they remained unchanged or, in some cases, had even increased through the 1990s. Since the start of the 21st century, adolescent fertility rates (15-19 years) in most countries in the region had fallen. Social inequality was closely associated to adolescent fertility (15-19 years): the available data showed higher adolescent fertility in disadvantaged groups, such as adolescents with eight years or less of schooling. Although countries in Latin America and the Caribbean had demonstrated growing political will to prevent adolescent fertility, levels had remained relatively high in the region. Additional interventions were needed, including expanding access to efficient contraceptive methods and universal comprehensive sexual education.

Professor Mohammad Bellal Hossain, University of Dhaka, presented a study on early adolescent fertility in Bangladesh. The main data source for his work were the eight rounds of Demographic and Health Surveys (DHS) that had been conducted in the country since 1993. In Bangladesh, the early adolescent birth rate of girls aged 10-14 years had decreased from 10 births per 1,000 girls in the 2014 survey to 5 per 1,000 in the 2017/2018 survey. The birth rate for adolescents aged 15-19 years had also fallen, from 113 to 108 births per 1,000 during the same time period. The speaker cautioned that such a decline might not be entirely reliable, since no clear longer-term downward trend was evident from earlier surveys. He presented the levels and trends of early adolescent fertility (10-14 years) disaggregated by administrative areas, rural-urban residence, educational attainment and wealth quintiles. The analysis showed that early adolescent fertility was higher in rural areas, for girls with less education and for those who lived in poorer households. The presenter pointed out that these findings could provide the empirical evidence for policy making. For example, the correlation between early adolescent fertility levels and education suggested that keeping girls in school could reduce early childbearing. Also, one major driver of under-15 fertility in Bangladesh was child marriage. According to the 2017/2018 DHS survey, nearly 60 per cent of all women aged 20-24 were married by the age of 18 years, one of the highest levels of early marriage globally. Other drivers of elevated early adolescent fertility included low-income levels, low rates of modern contraception use, cultural traditions and norms, including the stigma of infertility, improved status of young girls after giving birth, a lack of girls' individual agency, and misconceptions about contraception.

Mr. Francis Wreh, Liberia Institute of Statistics and Geo-Information Services (LISGIS), discussed adolescent fertility (15-19 years) in Liberia, including an evaluation of the data and estimates of adolescent fertility. The major data source was a series of Demographic and Health Surveys (DHS). In Liberia, the total fertility had declined from 6.7 births per 1000 women in 1986, to 5.2 in 2007, 4.7 in 2013 and 4.2 in 2019/2020. The presenter provided fertility estimates from the 2019/2020 DHS disaggregated by 5-year age groups for ages 10 to 49 years, as well as for rural and urban areas. Some 30 per cent of women aged 15-19 years had begun childbearing. Twenty-five per cent of adolescents in this age group had already had a live birth and an additional 5 per cent were pregnant with their first child at the time of the survey. The proportion who had started childbearing at specific ages ranged from 4 per cent by the age of 15 years to 55 per cent by the age of 19 years. Girls in rural areas tended to start childbearing earlier than their urban counterparts. Girls aged 15-19 with no education started childbearing earlier than those with at least some education. Childbearing among girls aged 15-19 years was most common (40 to 42 per cent) among those in the lowest three wealth quintiles. Mr. Wreh noted that underlying factors that adversely affected the sexual and reproductive health of young people included the prevalence of gender-based violence, sexual abuse and rape, participation in commercial sex work, intravenous drug usage, risky sexual behaviour, and limited access to family planning services. Other key factors included poverty, traditional cultural practices,

lack of enforcement of existing laws outlawing marriage under the age of 18, and poor awareness of sexual and reproductive health among young people. Teenage pregnancy was a major concern in Liberia because of the risks and complications associated with pregnancies at ages 12 to 14 years and the increasing number of illegal and unsafe abortions.

Ms. Neneh Conteh-Khali, Statistics Sierra Leone, noted that vital registration data in Sierra Leone were incomplete, and that the main data sources on young adolescent fertility were DHS and MICS, but also census data were used. Although population censuses also collected data on fertility, they did not cover fertility among girls aged 10-14 since they were not considered to be part of the conventional group of women of reproductive age, that is, those aged 15 to 49 years. Census data also suffered from overreporting of recent births in the 2004 census and underreporting of recent births in the 2015 census. The estimates of early adolescent fertility (10-14 years) presented by Ms. Conteh-Khali were based on the 2004 and 2015 population censuses using data on children ever born reported by older women instead. These estimates indicated that the adolescent birth rate (10-14 years) declined from 8 births per 1,000 girls aged 10-14 years in 2004 to 5 per 1,000 in 2015. Such estimates matched closely the United Nations estimates based on DHS data, and were positively correlated with the total fertility rate and with the adolescent birth rate (15-19 years). Early onset of sexual activity, early marriage, cultural acceptance of adolescent fertility and sometimes coercive sexual intercourse were major drivers of early adolescent fertility in Sierra Leone. As part of the Government's action to curb gender-based and domestic violence in the country, the Government had passed two laws, the 2007 Registration of Customary Marriage and Divorce Act, which stipulated age 18 as the minimum age of marriage and the Sexual Offences Act of 2012, which considered intercourse with persons under age 18 as illegal or a sexual violation. Ms. Conteh-Khali concluded her presentation by proposing to use census data on children ever born to estimate fertility of 10-14-year-old girls, to collect data from girls aged 10 to 14 years in the DHS and MICS surveys, and to use panel studies to complement cross sectional studies.

During the discussion, participants acknowledged the importance of having disaggregated data in order to calculate fertility below age 15. Although the disaggregation was not required for the purpose of SDG monitoring and reporting, disaggregated data could be useful for data validation and for setting policy priorities. Participants discussed the possibility of using other factors to validate the estimates of fertility between ages 10-14, such as contraceptive use, the prevalence of early marriage, sexual initiation, education levels, and urban or rural residence. Considering that in some countries adolescent childbearing tends to occur within marriage, the meeting found that indicators of early marriage would be useful in assessing and validating the estimates of early adolescent fertility in those countries. The discussion also highlighted that in other parts of the world, particularly in Latin America and the Caribbean, where early marriage was rare, early adolescent fertility generally occurred outside marriage. Analysts would have to consider the importance of such cultural factors and to use proximate indicators for data validation based on the national context. One participant suggested to use panel studies to clarify the relationship between early marriage and early fertility. The meeting discussed the possibility of using the age at first sexual intercourse to validate the estimates of under-15 fertility, concluding that it should be considered in conjunction with contraceptive use. For example, in Europe, early intercourse was common, but because contraception was widely available and used, early adolescent fertility was very rare. Another example was the case of Chile, where girls aged 10 to 14 years had access to the morning-after pill with parental consent and those aged 15 to 19 years could use it without parental consent. Other examples were provided that demonstrated the need to understand the country-specific context to select appropriate variables to validate fertility estimates.

In Bangladesh for example, contraception was generally available. However, many family planning clinics were not able to ensure that adolescents and youth had access to the full range of family planning methods of their choice and many service providers were not trained on how to effectively counsel young people on the range of methods.

E. Recommendations for Validation, Selection and Reporting of Adolescent Fertility

The last session reviewed key messages from the previous sessions and discussed ways to improve the understanding and enhance the quality of data and estimates on early adolescent fertility. Participants provided practical recommendations for validating and selecting data to be used for analysing and reporting on early adolescent fertility data in the context of the SDGs.

Mr. François Pelletier, Population Division, summarized the key challenges the Division faced in reporting the adolescent birth rate (ABR) for the Global SDG Indicators Database. In particular, the IAEG-SDGs limited the selection of data points for SDG indicator 3.7.2 to one birth rate per reference year, calculated from national data sources. The challenge was to select the best plausible birth rate for a given country and reference year from among the multiple estimates obtained from various data sources and using different methods and assumptions. Participants were invited to provide feedback on the approach currently used by the Division to select datapoints for reporting the ABR for women aged 15-19 and to identify ways to improve the selection of the most appropriate data points.

Participants were also invited to consider alternative, more scientific approaches, such as curve-fitting and modelling to assess the validity of the data reported and to produce comparable estimates across countries and over time. A related suggestion was to publish all the data used in the estimation process. Further, participants were invited to provide guidance on how to adjust data that might be subject to systematic or random errors, such as sampling size, sampling errors, age-misreporting and under-reporting of births, that affect the quality of data from surveys and to some extent also from CRVS. In addition, meeting participants were asked to comment on the selection of birth history data on fertility below age 15 provided by different 5-year age-groups of women and to define the population at risk among girls ages 10 to 14 years to become pregnant to be considered for reporting of fertility below age 15.

Concerning the suitability of the present approach for selecting one data point for the ABR for girls between age 10 and 14 years, participants discussed the advantages and disadvantages of selecting a single birth rate per reference year by using a smoothed average (line) and 95 per cent confidence intervals. The Division clarified its procedures and criteria used to select a single birth rate per reference year for each country from a cloud of data points visualised on a graph.[9]

With regard to the suitability of the present approach applied by the Population Division to select the ABR for women aged 15-19, the participants agreed that the selection criteria needed to be as standardized and transparent as possible in order to reduce subjective selection biases. Transparent criteria were also needed for the selection of data points to be included in the estimation of the smoothed average line with 95 percent confidence intervals. The meeting agreed that ‘closeness to the median line’ should be one of the criteria for selection, in addition to consistency with the historic trend as well as country-specific circumstances. Participants noted that the data points reported and published so far varied considerably

[9] The background paper prepared for this meeting and presented earlier provides further detail on this procedure.

regarding data source (census, household survey, CRVS), sampling size and magnitude of sampling error (in the case of surveys), coverage (in the case of surveys and CRVS), under-reporting of births, and age-misreporting among other challenges that impact on the quality of the fertility data and related estimates.

Whereas participants agreed that the present approach to select the most reliable data point could continue to be applied, the Division should explore ways to improve its approach to data selection. It should also consider preparing model-based country estimates when no reliable estimates were available for a particular year. Applying model-based estimates would require full transparency of the model to be applied, including justifying the selection of the particular model as well as providing detailed specifications, including assumptions and input data. The experts also suggested to review the methodologies used for reporting on maternal and child mortality in the SDG context (indicators 3.1.1 and 3.2.1 respectively). For these indicators, the estimates reported were model-based "trend" estimates which were generally close to the underlying data.

Although model-based estimates provided a transparent methodological approach to the estimation of the ABR for both age-groups, they were sensitive to the inclusion or exclusion of observed data points, particularly outliers. Addition or exclusion of observed data could change the smoothed average and alter the published historical estimates anytime a new data-point was included into the calculation of the smoothed average or any other model-based trend line. The discussion emphasized the need to focus on enhancing the assessment of the quality of the of data points selected for inclusion in the smoothed average line currently in use and also in curve-fitting and modelling exercises.

Participants noted the difficulties in having a standardized approach to assessing data quality, given the various data sources (population censuses, household surveys, CRVS, HDSS) and their respective limitations, including the fact that some data and estimates of adolescent fertility derived from CRVS or DHSS were not always nationally representative. The meeting suggested that the Division assess the impact of age misreporting on fertility estimates and reduce the impact of subjective judgement. Comparing estimates from different sources would be helpful in identifying and excluding outliers before averaging, modelling or curve fitting. Another approach to check the consistency of the age-specific fertility rates (ASFR) for the two age-groups was to use data from the same source to calculate ratios of the two ASFRs to identify possible outliers or to check the consistency of the ASFRs by comparing them to the TFR for the specific country and time.

The meeting recommended that the Division report a hybrid set of estimates, drawn from observed data as well as from modelled values when no reliable observations were available. It also recommended to report for each country three data points (low, medium and high) for each reference year, estimated without using weights if reporting of more than one data point was possible. The meeting acknowledged that additional work was needed for the Population Division to present a new proposal to the Inter-agency and Expert Group on SDG Indicators.

The meeting was informed that the current practice was not to alter previously reported data, with the exception of (a) updating denominators derived from the biennial update of the World Population Prospects or (b) a few cases where additional reliable data from past years became available. In the previous reporting cycles, changes in the adolescent birth rate reported to the Global SDG Indicator Database had triggered queries for justification of any such changes from both the Statistics Division and Member States.

Given the importance of household surveys, particularly the Demographic and Health Surveys (DHS) as a source for data on adolescent fertility and on early adolescent fertility in particular, the meeting reviewed the value and shortcomings of birth history data on early adolescent fertility provided by the DHS. Although DHS data were generally not adjusted and the estimates were published based on the data as they were collected, DHS provided general guidelines for data adjustment by the users to address possible implications of unadjusted data on curve-fitting or data modelling.

The meeting also discussed which age groups of women provided the most reliable estimates of early adolescent fertility. Joint analysis of birth histories and pregnancy histories of all women aged 15-19 years might improve the estimates of early adolescent fertility at ages 10-14 years. Even more reliable estimates could be obtained from birth histories of women aged 20 years and above as research had shown that women interviewed at older ages tended to report under-15 births that they did not report when they were interviewed as teenagers. However, such approach had to be weighed against the fact that estimates based on birth histories of older women applied to a reference time that was further away from the survey date, thus increasing the risk of recall bias. One participant suggested that birth histories going back more than 15 years would become inaccurate and the potential gain in data quality would be diminished. In this context, modelled estimates would probably yield higher quality data.

The meeting also addressed the question if all girls aged 10-14 should be considered in the population at risk of becoming pregnant and to bear a child. Given that childbearing is very rare below age 12, the meeting recommended to limit the population at risk to girls aged 12 to 14 years in order to provide more accurate birth rates for adolescents in this age group. DHS was calculating birth rates based on data pertaining to five years before the survey which were derived from the birth histories of mothers aged 18 and 19. To calculate the birth rate for the 12-14 age group, DHS applied a multiplier (0.6) to the birth rate of girls aged 10-14 years. The birth rate published in the DHS reports was based on birth histories of adolescents aged 15 to 17 years at the time of the survey, for a reference time of three years before the survey, which yielded a birth rate among girls aged 12-14 years.

The meeting then discussed the possibility of collecting fertility and related reproductive health data directly from very young girls. The practice of DHS to exclude girls younger than age 15 from its survey programme was based on the requirement of informed consent as well as on considerations related to sample size: surveys would have to include extraordinarily large numbers of girls under age 15 years in order to obtain reliable estimates. For the DHS, using the birth history of girls over the age of 15 years would continue to be the only option to collect fertility data for girls under age 15.

To conclude, meeting participants made the following recommendations regarding the future work of the Division in estimating adolescent fertility:

1. Continue using the present procedure for data analysis and selection while applying a transparent set of criteria to select data points that reduces potentially subjective, analyst-specific bias.
2. Concerning the reporting of data in the context of the SDGs and taking into consideration the guidelines provided by the IAEG-SDGS, consider a hybrid approach: report data from DHS and other reliable sources, based on the Division's assessments of data quality, and provide model-based estimates where national data are not available or do not meet quality standards.
3. Improve the methodology for selecting data by identifying outliers that should be excluded for data-point selection, curve fitting or modelling.

4. If more than one data point per calendar year and country could be reported, provide several data-points, that is, a medium, a high and a low value among available data that meet quality standards.
5. Implement a model-based approach for the reporting on the ABR for countries without reliable data. Such approach, which would be consistent with reporting on other demographic indicators, such as child and maternal mortality, would also enhance transparency. Another advantage of model-based estimates over individual data points derived from a variety of sources and based on a wide range of estimation techniques was that they were obtained in a standard fashion across countries and time and could thus be used for comparative analysis. A formalized and transparent approach would also protect against potential analyst-specific biases.
6. Provide data and estimates which are limited to the population at risk of becoming pregnant among girls aged 10-14 years, namely girls aged 12-14 years. Such data would provide more reliable and useful estimates of birth rates for girls under 15 years of age.
7. Pursue the analysis of the birth and pregnancy histories of women aged 15-19 years, which may inform and potentially improve the estimates of early adolescent fertility at ages 10-14 years. Robust estimates could also be obtained from birth histories of women aged 20 years and above.

F. Closing

In closing the meeting, Mr. Wilmoth thanked the participants for the two days of insightful and informative discussions, which would greatly assist the Population Division in assessing and selecting the data and estimates on early childbearing and to make recommendations to the IAEG-SDGs. He expressed his appreciation for the longstanding contributions of some of the more senior experts to the work of the Division and invited younger participants to engage with and support the work of the Division. He closed by emphasizing the unique role of the Population Division in the world of demography and emphasized the important contributions of experts to its work.

ANNEX 1. ORGANIZATION OF WORK

26-27 October 2020

UNITED NATIONS EXPERT GROUP MEETING ON
THE EVALUATION OF ADOLESCENT FERTILITY DATA AND ESTIMATES
Population Division
Department of Economic and Social Affairs
United Nations Secretariat
New York

Organization of work

Monday, 26 October 2020

9:00-09:30 **Session I: Opening of the meeting and welcome**

- John Wilmoth, Director, Population Division, UN DESA

09:30-11:00 **Session II: Setting the stage: Reporting on ABR in the context of the SDGs**

- Moderator – Nicole Mun Sim Lai, Population Division, UN DESA

- Karoline Schmid, Population Division, UN DESA – Overview of levels and trends of early childbearing
- Patrick Gerland, and Giulia Gonnella, Population Division, UN DESA – World Population Prospects and 1950-2020 estimates for age-specific fertility patterns: past experience and future plans
- Stephen Kisambira, Population Division, UN DESA – Reporting on adolescent birth rate data for SDG indicator 3.7.2: data, methods, trends and estimation issues

Discussion

11:00-11:15 Break

11:15-1:15 **Session III: Data and estimates from various data sources on adolescent fertility (ages girls/women 10-14 and 15-19)**

- Moderator – Stephen Kisambira, Population Division, UN DESA

- Bruno Schoumaker, Catholic University of Leuven – Estimating Trends in under-15 fertility in developing countries with demographic surveys (WFS, DHS, MICS, RHS, PAPFAM)
- Adriana Skenderi, Statistics Division, UN DESA - United Nations Demographic Yearbook data on adolescent fertility

- Clementine Rossier, University of Geneva – Health and Demographic Surveillance Systems (HDSS) - Adolescent fertility is lower than expected in rural areas: results from 10 African HDSS
- Sarah Neal, University of Southampton – How reliable are reports of early adolescent pregnancy in Demographic and Health Surveys?

Discussion

Tuesday, 27 October 2020

09:00-9:15 **Recap of day 1 and outlook for day 2: Karoline Schmid, Population Division, UN DESA**

9:15-10:45 **Session IV: Adolescent Fertility: Regional and national perspectives**

- Moderator – Yumiko Kamiya, Population Division, UN DESA

- Jorge Rodriguez, ECLAC - Adolescent fertility in Latin America and the Caribbean: sources, indicators, trends and patterns
- Neneh Conteh Khali, Sierra Leone, Statistics Sierra Leone – A glimpse of early adolescent fertility in Sierra Leone
- Francis Fonanyeneh Wreh, Liberia, Liberia Institute of Statistics and Geo-Information Services (LISGIS) – The situation of adolescent fertility (15-19 years) in Liberia
- Mohammad Bellal Hossain, University of Dhaka, Bangladesh – Early adolescent fertility in Bangladesh: Trends and differentials

Discussion

10:45-11:00 Break

11:00-12:30 **Session V: Open discussion and recommendations for validation, selection and reporting of adolescent fertility**

- Moderator – Francois Pelletier, Population Division, UN DESA

12:30-12.45 **Session VI: Closing**

- John Wilmoth, Director, Population Division, UN DESA

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List of participants

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