STEP UP

STRENGTHENING EVIDENCE FOR PROGRAMMING ON UNINTENDED PREGNANCY

Conceptualizing and Measuring Unintended Pregnancy and Birth: Moving the Field Forward

Expert Group Meeting
Accra, Ghana
June 2nd – 4th, 2015

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RATIONALE AND OBJECTIVES

Unintended pregnancies occur frequently – in 2012, 40 percent of pregnancies worldwide were reported as mistimed or unwanted in DHS surveys[1]. Consequently "*the concept of unintended pregnancy is important in understanding fertility-related behaviors, forecasting fertility, estimating unmet need for contraception, understanding the impact of pregnancy intentions on maternal and child health, designing family planning programs and evaluating their effectiveness, and creating and evaluating community-based programs that prevent unintended pregnancy".* [2] Multiple approaches exist for defining and measuring unintended pregnancy, which complicates efforts to design, implement and evaluate family planning programmes. Moreover, the concepts underpinning these definitions and measures vary, and so comparisons between measures may not be valid if based on different constructs.

Reducing unintended pregnancies is frequently stated as a priority policy goal for many governments and donors. For example: DFID's *Framework for Results for Improving Reproductive, Maternal and Newborn Health*[3] has a strategic priority to "prevent unintended pregnancies by enabling women and adolescent girls to choose whether, when and how many children they have"; one of USAID's core development objectives[4] is to "prevent 54 million unintended pregnancies"; and two of the 11 core indicators for FP2020 are "number of unintended pregnancies" and "number of unintended pregnancies averted due to use of modern methods of contraception".

Valid, reliable and agreed-upon measures of unintended pregnancy are therefore critical for forecasting investment outcomes and evaluating the impacts of programmatic investments. STEP UP has previously convened an expert group[5] to review and harmonize the statistical models used to estimate the impact of family planning use on reducing three adverse health outcomes (unsafe abortion; maternal death; infant and child death). These models conceptualize the impact of contraceptive use through its effect on reducing the risk of unintended pregnancy among women not using contraception. The group agreed to use a pregnancy rate that is estimated by dividing the number of unintended pregnancies among women with unmet need using no contraceptive method, by the number of women with unmet need using no contraceptive method. It was also agreed that the "number of unintended pregnancies" would be estimated using the approach developed by the Guttmacher Institute in its *Adding it Up* methodology[6,7] which itself relies on the DHS indicators of the intention status of births.

A pregnancy is most commonly defined as unintended if it is either **unwanted** (i.e. occurred when no children or no more children were desired, sometimes termed "number failures"), or is **mistimed** at the time of conception (i.e. occurred earlier than desired but would have been desired at a later time, sometimes termed "timing failures"). All other pregnancies are defined as **intended** pregnancies, including those that occurred at the time or later than women desired or to women who said they didn't care about pregnancy timing[8]. This definition was

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[1] Sedgh G, Singh S, and Hussain R. 2014. "Intended and Unintended Pregnancies Worldwide in 2012 and Recent Trends", Studies in Family Planning 45(3): 301-314.

[2] Santelli J, Rochat R, Hatfield-Timajchy K, Colley Gilbert B, Curtis K, Cabral R, Hirsch J, Schieve L and Unintended Pregnancy Working Group. 2003. "The measurement and meaning of unintended pregnancy", Perspectives on Sexual and Reproductive Health 35(2): 94-101.

[3] DFID. 2010. Choices for Women: Planned Pregnancies, Safe births and Healthy Newborns. DFID, London.

[4] USAID. 2011. USAID Policy Framework 2011 – 2015. USAID, Washington.

[5] STEP UP. 2014. Measuring the Impact of Contraceptive Use on Unintended Pregnancy and Other Health Outcomes, Population Council, New York; http://www.popcouncil.org/uploads/pdfs/2014STEPUP_MeasuringImpact.pdf

[6] Sedgh et al 2014, op cit

[7] Darroch J and Singh S. 2011. Adding It Up: The Costs and Benefits of Investing in Family Planning and Maternal and Newborn Health— Estimation Methodology, Guttmacher Institute, New York.

[8] Santelli et al 2003 op cit; Santelli J, Lindberg L, Orr M, et al. 2009. "Toward a multidimensional measure of pregnancy intentions: evidence from the United States", Studies in Family Planning, 40(2):87–100.

first developed for the U.S. 1965 National Fertility Study[9] and incorporated into the U.S. National Survey of Family Growth (NSFG) and subsequently adapted by the Demographic and Health Surveys (DHS) for use in developing countries; both definitions result in a pregnancy being categorised in one of three ways: intended, unwanted or mistimed. These surveys ask women who have given birth to retrospectively describe their pregnancy intentions by combining their recollections of the desire for (more) children and their preferred timing of a pregnancy at the time of conception. Some surveys, e.g. the NSFG, also ask intention status of all pregnancies, regardless of their outcome. Since pregnancies ending in induced abortion are typically strongly underreported in surveys, they are usually all considered to have been unintended conceptions[10].

Calculations of the total number of unintended pregnancies in a population include, therefore, three factors: i) all unplanned births; ii) all abortions (it is assumed that an abortion is always the result of an unintended pregnancy); and iii) all miscarriages from unintended pregnancies (it is assumed that intended and unintended pregnancies have the same probability of ending in miscarriage, adjusted for differences between births and abortions in length of gestation[11,12].

Over the past 20 years, discussions and debates have arisen about the conceptualization and definition of unintended pregnancy, mostly in the USA and other developed countries[13]. For developing countries, however, there have been very few analyses of unintended pregnancy, in terms of its conceptualization, definition, measurement, or its determinants and consequences; no systematic review of the literature from developing countries has been undertaken, although several analyses are available[14]. Several issues have emerged that should be considered when defining the meaning of unintended pregnancy in developing country settings and the implications for women's lives and for FP programming[15].

> **The conceptual distinction between 'intendedness' and 'wantedness' has been recognised and measured in some contexts**: "*Intendedness has to do with cognition and, specifically, with the degree of prior planning for a pregnancy, whereas wantedness has to do with affect and, specifically, with the feelings – both positive and negative – that occur in response to a pregnancy*"[16]. Whether and how this conceptual distinction should be captured when measuring fertility intentions remains an open issue, especially in large-scale surveys in developing countries.

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[9] Ryder N and Westoff C. 1971. Reproduction in the United States, Princeton University Press, Princeton.

[10] Darroch J and Singh S. 2011, op cit

[11] Singh S, Sedgh G & Hussain R. 2010. "Unintended pregnancy: Worldwide levels, trends, and outcomes", Studies in Family Planning. 41(4): 241–250.

[12] Darroch J and Singh S. 2011, op cit

[13] Santelli et al 2003. op cit ; Tsui A, McDonald-Mosley R and Burke A. 2010. "Family planning and the burden of unintended pregnancies". Epidemiologic Reviews, 32:152–174

[14] Malarcher, S, Olson L and Hearst N. 2010. "Unintended pregnancy and pregnancy outcome: equity and social determinants". Equity, Social Determinants and Public Health Programmes, edited by E. Blas and A. Kurup. WHO, Geneva; Exavery A, et al. 2013. "How mistimed and unwanted pregnancies affect timing of antenatal care initiation in three districts in Tanzania", BMC Pregnancy and Childbirth, 13:35; Stephenson R, Koenig M, Acharya R and Roy. T. 2008. "Domestic violence, contraceptive use, and unwanted pregnancy in rural India", Studies in Family Planning, 39(30): 177-186; Koenig M, Acharya R, Singh S and Roy T. 2006. "Do current measurement approaches underestimate levels of unwanted childbearing? Evidence from rural India", Population Studies, 60(3): 243-256; Cu Le L, Magnani R, Rice J, Speizer I and Bertrand W. 2004. "Reassessing the level of unintended pregnancy and its correlates in Vietnam" Studies in Family Planning, 35(1): 15-26; Marston C & Cleland J. 2003. "Do unintended pregnancies carried to term lead to adverse outcomes for mother and child? An assessment in five developing countries", Population Studies, 57(1):77-93; Williams L & Sobieszczyk T. 2003. "Couple attitudes and agreement regarding pregnancy wantedness in the Philippines", Journal of Marriage and Family, 65(4): 1019-1029.

[15] This summary is drawn from Askew, I. 2013. "Unmet Need and Unintended Pregnancy: The Bigger Picture", Is Access Enough? Understanding and Addressing Unmet Need in Family Planning, IUSSP Scientific Panel on Reproductive Health and STEP UP, Nanyuki, Kenya, 14 – 17 May.

[16] David H. 2011. "Born Unwanted: Mental Health Costs and Consequences", American Journal of Orthopsychiatry, 84(2): 184-192.

➤ **The assumption that women, and their partners, can and do make conscious decisions about pregnancy may not be warranted.** In contexts in which personal volition and control over planning and decision making cannot be taken for granted, concepts of "intendedness", "wantedness" and the ability to control timing of these events may be of little use analytically unless their meaning within a specific context is fully understood.

➤ **Responses to questions about pregnancy intention may not be stable over time.** Retrospective reporting of pregnancy desire may be influenced by the experience of parenthood when pregnancy leads to the birth of a child. It may also be influenced by the desire to ratify the decision to terminate a pregnancy in the case of abortion. Retrospective reporting bias may thus lead to the actual proportion of unintended pregnancies being higher[17]. In general, however, longitudinal studies have found that population-level distributions of births by intention status are fairly stable even though there are shifts at individual levels.

➤ **Unwanted pregnancy is often wrongly conflated with mistimed pregnancy**. The two concepts usually reflect different individual and social situations, with unwanted pregnancies being more common at the end of a woman's reproductive life and mistimed pregnancies more common at the beginning[18]. Some young women, however, do retrospectively report births as having been unwanted (i.e. never wanted), which may represent a misreporting of their lack of happiness with the pregnancy rather than with their plans for number of children in their lifetime.

➤ **Increases in the prevalence and acceptability of premarital sex in many developing countries are changing the social context in which conception and first pregnancies occur**. This may increase the occurrence of an unintended pregnancy and of it being considered mistimed rather than unwanted.

➤ **The meaning of an unintended pregnancy is not adequately captured in dichotomous variables**. Ambivalence expressed by many pregnant women suggests that reporting pregnancies as distinct, opposing categories of intended or unintended may lack validity. Frequently documented inconsistencies between attitudes and behaviours demonstrate this ambivalence: pregnancies have been described as wanted following contraceptive failure and after a woman reported unmet need at the time of conception[19]. Conversely, women stating intentions to defer or limit childbearing can have relatively high rates of contraceptive non-use[20]. Moreover, a pregnancy categorised as "mistimed" that occurs many months before

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[17] Koenig et al. 2006. op cit; Westoff C. and Bankole A. 1998. "The time dynamics of unmet need: An example from Morocco," International Family Planning Perspectives 24(1): 12–24; Casterline J, El-Zanaty F and El-Zeini L. 2003. "Unmet need and unintended fertility: Longitudinal evidence from Upper Egypt," International Family Planning Perspectives 29(4): 158–166; Speizer I, Calhoun L, Hoke T and Sengupta R. 2013. "Measurement of unmet need for family planning: Longitudinal analysis of the impact of fertility desires on subsequent childbearing behaviors among urban women from Uttar Pradesh, India," Contraception 88(4): 553–560; Jain A, Mahmood A, Sathar Z, and Masood I. 2014. "Reducing unmet need and unwanted child-bearing in Pakistan: Evidence from a panel survey," Studies in Family Planning, 45(2): 277–299; Machiyama K, Baschieri A., Dube A, Molesworth A, Crampin AC, Glynn JR, French N, and Cleland J. 2015. "An assessment of childbearing preferences in Malawi", Studies in Family Planning.46(2): 161-172.

[18] Luker K. 1999. "A reminder that human behavior frequently refuses to conform to models created by researchers". Family Planning Perspectives 31(5): 248-249.

[19] Bradley S, Croft T, and Rutstein S. 2011. The Impact of Contraceptive Failure on Unintended Births and Induced Abortions: Estimates and Strategies for Reduction, DHS Analytical Studies No. 22. ICF Macro: Calverton; Ali M, Cleland J and Shah I. 2012. Causes and Consequences of Contraceptive Discontinuation: Evidence from 60 Demographic and Health Surveys, WHO: Geneva; Trussell J, Vaughan B and Stanford J (1999). "Are all contraceptive failures unintended pregnancies? Evidence from the 1995 National Survey of Family Growth", Family Planning Perspectives, 31: 246-247 & 260; Mosher W, Jones J, and Abma J. 2012. "Intended and unintended births in the United States: 1982–2010", National Health Statistics Reports; no 55, National Center for Health Statistics, Hyattsville.

[20] Bradley et al 2011, idem; Ali et al 2012, idem.

the preferred timing is likely to have different consequences than a "mistimed" pregnancy occurring a few weeks or months earlier than desired[21].

➢ **The male partner has been neglected in the measurement of unintended pregnancy.** DHS and other retrospective surveys usually collect information on unintended pregnancy from women only, and so little is known about the male partner's perceptions of pregnancy intendedness which may influence pregnancy outcome. Where research has examined the views of both partners, the focus has been on attitudes towards family size ideals and use of contraception[22].

➢ **Estimates of unintended pregnancies that include all reported abortions can be misleading**. The assumption that only unintended pregnancies are terminated does not allow for the possibility that a woman's circumstances may change after becoming pregnant so that what may have been an intended pregnancy at the time of conception subsequently becomes unwanted and is terminated. A minority of abortions are taken for health reasons.

➢ **Existing measures of unintended pregnancy do not always predict anticipated unfavourable outcomes**. Reviews of the research[23],[24] have suggested that the effect of unintended pregnancies on maternal health behaviours and adverse birth outcomes was inconclusive.

➢ **Data collected retrospectively and prospectively face similar methodological challenges.** Measurement of "unmet need" in the DHS and other surveys uses prospective questions about women's current plans or desires for whether to have a(nother) child, and if so how soon[25]. These questions are parallel to the retrospective questions used in the survey module to classify the intention status of past pregnancies. Thus issues of ambivalence, changeable attitudes, and other issues raised above may be problematic regardless of study and question design.

Given the complexity of conceptualizing and measuring unintended pregnancy, STEP UP convened an expert group meeting with the objectives of:

1. Contributing to a clearer understanding and agreed-upon definition of unintended pregnancy.
2. Reviewing existing approaches to the conceptualization and measurement of unintended pregnancy.
3. Drawing from existing approaches, propose and draft indicators, metrics, data collection instruments and analysis strategies for measuring and tracking unintended pregnancy through multiple data collection procedures.
4. Identifying challenges and opportunities for communicating evidence on unintended pregnancy and informing policy, planning and investment decisions.

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[21] Kost K and Lindberg D. 2015. "Pregnancy intentions, maternal behaviors, and infant health: investigating relationships with new measures and propensity score analysis", Demography, 52(1):83-111.

[22] Williams & Sobieszczyk. 2003, op cit

[23] Santelli et al. 2003, op cit 99

[24] Tsui et al. 2010, op cit

[25] Bradley S, Croft T, Fishel J, and Westoff C. 2012. Revising Unmet Need for Family Planning, DHS Analytical Studies No. 25, ICF International, Calverton.

WHY ARE IMPROVEMENTS IN THE MEASUREMENT OF UNINTENDED PREGNANCY NEEDED?

John Cleland reminded the group of the many strengths of the existing measures for unintended pregnancy and unmet need in order to challenge the group to proceed carefully when developing recommendations that could have profound implications for the field. Cleland posited that, apart from academic specialists interested in detailed explanations of fertility and family planning behaviour, most policymakers and programme managers appear happy with the existing measures of unintended pregnancy and unmet need, which provide a compelling rationale for investment in family planning. Such decision-makers usually prefer simple measures over more complex indicators and indices; he illustrated this principle by citing the lack of enthusiasm for the additions made to the DHS instruments that sought to capture the intensity of reported prospective fertility preferences but which were later dropped because of lack of attention from analysts. Importantly, improved measures would have to grapple with at least three critical challenges: (a) conceptual distinctions between planning, intending, and desiring a pregnancy; (b) valid measures of women's and couple's indifference or ambiguity around a pregnancy, (c) the intensity of intentions; and (d) the influence of other actors, especially husbands and other family and community members, on the experience becoming pregnant. Cleland suggested that improved measurement would need to be grounded in psychological theory, but wondered which theories would be most plausible. He referred to the extensive amount of academic research into unintended pregnancy in the US but which has yet to produce a satisfactory solution to the challenge. He concluded that "*the brute reality is that the two main constructs--- abstract prospective preferences and more emotional reactions after the event – are different and cannot be reconciled*".

To prepare the group for a critique of existing measurement approaches, **Jacqueline Darroch** provided an overview of the *Adding It* UP (AIU) methodology to illustrate how using reported data influences what we think we know about unintended pregnancy. AIU estimates indicate that 39 percent of all pregnancies in developing countries are unintended; however, studies that measure the prevalence, determinants and consequences of unintended births provide an incomplete assessment of unintended pregnancies, because live births make up little more than half of the outcomes of unintended pregnancies in Africa and less than half in Asia and in Latin America and the Caribbean. Consequently, estimates based on women's reports from DHS surveys yield much lower estimates (26-39% lower) of the proportion and numbers of unintended pregnancies that end in induced abortions or miscarriages than do studies in the same countries using Guttmacher's *Abortion Incidence Complications Method* (AICM) which provides an independent estimate of induced abortions. A lack of accurate data on non-live-birth outcomes, especially abortion, yields underestimates and biased estimates of unintended pregnancy prevalence, determinants and consequences. The AIU approach incorporates independent estimates of abortion and model-based estimates of miscarriages, which are assumed to be fairly evenly distributed across all pregnancies; the lack of valid data on miscarriages probably has little impact on our understanding about the determinants of unintended pregnancy, but may well restrict comprehension of their consequences.

Abortions are the outcome for high proportions of unintended pregnancies, in some cases outnumbering those that end in birth. They are significantly underreported by women and underreporting varies across geographic area and women's characteristics. Thus using information on abortion from surveys of women's reports will affect our measures of abortion and of unintended pregnancy. The limited availability of validated data on rates of abortion makes assessment and adjustment for their underreporting extremely challenging.

Analyses of the determinants of unintended births miss the most undesired pregnancies and so may not measure unintended pregnancies to women in especially tenuous circumstances and/or those women who are more able to obtain an abortion, especially where abortion is illegal. Moreover, analyses of consequences of unintended births miss the consequences for a woman who was unintentionally pregnant, but avoided giving birth through having an abortion or miscarriage.

John Casterline provided a number of reasons why more research on developing valid and agreed-upon measurement of unintended fertility would be beneficial and would justify an investment of resources.

Current estimators of **unwanted fertility** are downwardly biased, to an unknown degree, among different populations because they are based on standard survey items that are subject to marked response errors; moreover, it is unclear whether current estimators of *mistimed births* suffer from systematic bias. Biases apply to measures of unintended births and are even more severe for unintended pregnancies.

Assessment of the micro-level consequences of unintended childbearing is an important scientific goal because it is one of the underpinnings of advocacy for investments in population policies and programmes. However, there is no rigorous way to carry out such assessments with existing cross-sectional survey datasets because retrospective reports of the wantedness of recent births are probably the least valid of measures. Casterline recommended that longitudinal studies would be the most appropriate means for addressing this problem.

The standard items used in cross-sectional surveys fail to detect substantial and meaningful nuances in fertility desires, for example: indifference vs. highly salient attitudes; ambivalence vs. clearly-held views; and multidimensionality vs. multiple, possibly conflicting bases for wanting / not wanting children.

If fertility desires are highly changeable, as some empirical research suggests, this may undermine the utility of such measures when used for certain purposes, such as estimating unmet need and assessing consequences of unintended fertility. But how to render judgment about the stability of fertility desire measures is unclear – and if stated fertility desires are highly unstable how useful is this information for programming purposes?

Mistimed pregnancies (and births) constitute the majority of all unintended pregnancies globally, yet arguably they are measured more poorly in surveys than unwanted pregnancies. Retrospectively, it is entirely up to the respondent what was "too soon" and there is no allowance for reporting "later than wanted"; and prospectively the standard use of a 24-month cut-off for desire to postpone is arbitrary and may not reflect personal realities. But, is the timing of preferences worthy of further investment; why not use health criteria?

Timæus and Moultrie[26] posit that some women may report a **postponement** intention, that is, "not now, not in the near future, and no clear idea when". The current standard set of questionnaire items is poorly designed for capturing a fertility desire of this type. More fundamentally, this type of fertility desire is yet to be fully integrated into the conceptualization of unintended pregnancy.

Measuring the fertility intentions of adolescents/youth is challenging, including the identification of unintended pregnancies. The current approach presumes that fertility desires have been formulated and the standard items implicitly assume that the respondent's "reproductive career" is underway or about to start. The current questioning strategy also does not acknowledge the fluid, unstable nature of many sexual partnerships of adolescents. Finally, there is the specific challenge presented by the fact that in some settings many births to adolescents/youth are reported as "unwanted", no doubt an expression of feelings about the birth but not consistent with the demographic approach which would classify these births as "mistimed" because responses to other survey items indicates that the respondent wants births in the future..

Kaye Wellings provided important lessons that can be drawn from experiences in countries with wealthier populations where fertility rates have declined substantially, in many cases well below replacement level. She outlined numerous economic, social and demographic reasons for norms favouring fewer children and later parenthood, as well as improved availability of contraception. While many developing countries still have unwanted fertility rates of about one child per family, those with below replacement rates may have women with

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[26] Timæus I and Moultrie T. 2008. "On postponement and birth interval," <u>Population and Development Review</u>, 34(3)**:** 483–510.

an "unmet need" for another child. Given the rapid declines in fertility rates in most developing countries, including in many urban areas of sub-Saharan Africa, such countries may also soon be experiencing the increasing levels of, and changing reasons for, unintended pregnancy that are observed in countries where contraception is widely practised and pregnancy intentions and expectations are more firmly held.

MEASURES OF FERTILITY INTENTIONS AND UNINTENDED PREGNANCY USING CROSS-SECTIONAL SURVEYS

Trevor Croft provided an insightful overview of how unintended pregnancy has been measured by the DHS Program. A retrospective measure asked of women who state that they are currently pregnant was first introduced around 1990; the current, slightly amended, version asks: *When you got pregnant, did you want to get pregnant at that time?* If yes: *Did you want to have a baby later on or did you not want to have any (more) children?* All DHS also include a prospective measure of a woman's desire to limit or delay childbearing by asking currently married women whether they want another soon, want another later, want no more, or are sterilized or declared infecund.

Additionally, the DHS uses what is known as the "Lightbourne approach"[27] to estimate wanted fertility rates. This approach compares the number of living children at the time of conception with the stated ideal number of children; if the number of living children at conception equals or exceeds the ideal number, the birth is classified as unwanted. If a woman gives a non-numeric responses to the ideal number of children item (i.e. "up to God", etc.), then all her births are classified as wanted. The wanted fertility rate (WFR) is calculated like a standard total fertility rate (TFR), except it only includes wanted births. The measure asks women with children: "*If you could go back to the time you did not have any children and could choose exactly the number of children to have in your whole life, how many would that be?*" and women with no children "*If you could choose exactly the number of children to have in your life, how many would that be?*"

Some DHS, mostly in countries with high CPR, also use a series of questions to create a "reproductive calendar" to measure women's intentionality for all pregnancies during the preceding five-year period. This measure asks women for a month-by-month retrospective history of all births, pregnancies, terminations, and episodes of contraceptive use in five years (or more) prior to the survey.

In some surveys, each time a contraceptive method is discontinued, the woman is asked for the reason for discontinuation. One reason is "became pregnant while using", that is, contraceptive or use failure. A contraceptive failure rate can be calculated using a single decrement life table, which expresses failure in the absence of competing reasons for discontinuation, or multiple-decrement life table, where the decrements are the multiple reasons for discontinuation. These are calculated separately for each contraceptive method and typically presented as the cumulative probability of failure in the first 12 months of use.

The widely-used Multiple Indicator Cluster Survey (MICS) collects measures that are similar to the DHS, except that it does not include the Lightbourne measure and the contraceptive calendar (and so does not permit measurement of discontinuation and failure rates).

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[27] Lightbourne, Robert E. 1985. "Individual preferences and fertility behaviour," in J. Cleland and J. Hobcraft (eds.), <u>Reproductive Change in Developing Countries: Insights from the World Fertility Survey</u>, Oxford University Press, Oxford; pp. 165–198.

Croft also noted a number of limitations of these measures:

Retrospective measure:
- Ex-post facto rationalization
- Higher reporting of unwantedness of pregnancies compared with living children in most surveys
- Only captures births, not pregnancies and so is not able to measure abortion

Lightbourne approach:
- Women may revise their desired family size estimates to reflect their actual family size
- Useful only at an aggregate level because of the relationship between birth order, maternal age and classification of wantedness

Contraceptive failure:
- Only captures a portion of unintended pregnancies

Prospective measure:
- Aggregate-level -- does not classify the wantedness of specific pregnancies[28].

MULTIDIMENSIONAL SCALING OF UNINTENDED PREGNANCY FROM CROSS-SECTIONAL STUDIES

Although widely used, the retrospective measure of unintended pregnancy described above is considered by many to be a simplistic measure that does not fully encapsulate the multidimensional meaning of an unintended pregnancy (see Santelli et al[29] for a summary). **Ilene Speizer** reviewed the debate over measurement and scaling, starting with work by Trussell[30] which had demonstrated that many women who had contraceptive failures reported being happy or very happy with the pregnancy, which indicated that this inconsistency could reflect a number of underlying feelings, such as ambivalence toward a transition to motherhood or toward the woman's partner or partnership plans. Moreover, 'planning for' or 'intending to have' a pregnancy does not equate to 'wanting' a pregnancy, and the concept of planning may not be meaningful to women with little control over other aspects of their lives. Such ambivalence toward pregnancy may play out in imperfect use, resulting in a pregnancy that may be described as intended or unintended.

To address these concerns, the US NSFG incorporated new measures to capture the various dimensions of "unintendedness" that have emerged in the literature, largely based on research in the US and other developed countries. These measures include: wantedness; happiness to be pregnant; feelings about getting pregnant; partner intentions; motivations to avoid pregnancy; and whether the pregnancy was wanted with the partner. Analyses of the NSFG data showed that pregnancy intentions can encompass affective, cognitive, cultural, and contextual dimensions. Moreover, Bachrach and Newcomer[31] suggested that intentions are best measured on a continuum, and Stanford et al[32] recommended that the continuum needs to include two dimensions: affective, i.e. the desire for baby related to community, partner, and personal desires; and planning, i.e. preparation for pregnancy, life goals, education, etc.

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[28] Casterline J and El-Zeini L. 2007. "The estimation of unwanted fertility", Demography, 44(4): 729-45.

[29] Santinelli et al. 2003, op cit

[30] Trussell et al. 1999, op cit

[31] Bachrach C and Newcomer S. 1999. "Contraceptive failure and unintended pregnancy: Intended pregnancies and unintended pregnancies: Distinct categories or opposite ends of a continuum? Family Planning Perspectives, 31, 251–252.

[32] Stanford J, Hobbs R, Jameson P, DeWitt J and Fischer R. 2000. "Dimensions of Pregnancy Intendedness", Maternal and Child Health Journal, 4(3): 183-189.

Speizer concluded that measures of unintended pregnancy at the population level are consistent but at the individual level they are not. Measures that are retrospective may misrepresent intentions, and a simple three category measure (intended, mistimed, unwanted) misses the complexity of the construct. Moreover, research has shown that it is important to consider the role of partners and of ambivalence (notably toward pregnancy but also toward contraception) when measuring the meaning of pregnancy intentions. She then presented findings from a study in the US[33] which used factor analysis to develop a one factor "pregnancy desirability" construct which comprised multiple items such as happiness in becoming pregnant, effort in achieving pregnancy, and whether the woman wanted a baby with this partner, as well as items specific to whether or not it was a first pregnancy.

Speizer recommended that pregnancy intention measures should capture: a woman's feelings and acknowledge that ambivalence about future pregnancies is common because intentions can be fluid depending on time-specific situations; her plans around number and timing of pregnancies and what efforts she is taking to achieve these; and the relationship dynamics with her partner and wider family. She also cautioned that multidimensional measures can be difficult to translate into simple quantifiable messages for policymakers (as can be done with the three-category DHS measure), and that they cannot be easily incorporated into other key indicators that are derived from pregnancy intentions such as unmet need and wanted fertility rates.

Kaye Wellings described the rationale and development of a particular multidimensional index, the London Measure of Unintended Pregnancy (LMUP). This measure was developed and used within the UK's National Survey of Sexual Attitudes and Lifestyles (Natsal) and has subsequently been used in many other populations, both in developed and developing countries. The LMUP was developed through undertaking qualitative research among a small sample of women in the UK at different stages of pregnancy (including some who had had an abortion) to identify the key factors influencing perceptions of their pregnancy. A six-item questionnaire (see box) was then prepared based on this research and administered to 1,000 women, following which Principal Components Analysis was used to assess the construct validity[34].

The strengths of this multi-dimensional measure are:

– Six questions on contraceptive use, timing, intention, desire for a baby, partner discussion, and pre-conceptual preparations) through which women report the circumstances of their current or recent pregnancy;

– Has excellent psychometric properties;

LMUP scores
Question1: At the time of conception
0 Always used contraception
1 Inconsistent use
2 Not using contraception
Question 2: In terms of becoming a mother
0 Wrong time
1 OK but not quite right
2 Right time
Question 3: Just before conception
0 Did not intend to become pregnant
1 Changing intentions
2 Intended to get pregnant
Question 4: Just before conception
0 Did not want a baby
1 Mixed feelings about having a baby
2 Wanted a baby
Question 5: Before conception
0 Had never discussed children
1 Discussed but no firm agreement
2 Agreed pregnancy with partner
Question 6: Before conception
0 No actions
1 Health preparations (1 action*)
2 Health preparations (< 2 actions*)
* Health preparations included: taking folic acid supplements, stopping or reducing smoking, stopping or reducing drinking, healthy eating, and seeking medical advice before conception.

[33] Speizer I, Santelli J, Afable- Munsuz A and Kendall C. 2004. "Measuring Factors Underlying Intendedness Of Women's First and Later Pregnancies", Perspectives on Sexual and Reproductive Health,, 36(5):198-205.

[34] Barrett G, Smith S, and Wellings K. 2004. "Conceptualisation, development, and evaluation of a measure of unplanned pregnancy", Journal of Epidemiology and Community Health, 58(5):426–433, doi: 10.1136; Barrett G and Wellings K. 2002. "What is a 'planned' pregnancy? empirical data from a British study" Social Science and Medicine, 55: 545-557; www.lmup.co.uk

- Its face and content validity have been assured by qualitative research and its construct validity by multivariate analysis of survey data;

- Does not assume that women have fully formed childbearing plans or that their intentions are necessarily congruent with their actions, or that women are universally rational and see fertility as within their control;

- Can be used for measuring the meaning of any pregnancy, regardless of the outcome.

There are limitations, however, notably that although it has been used among many different populations, validation studies have only be undertaken in three settings, and that it has only been used retrospectively. Outstanding issues to be addressed are:

- Fidelity: Could it be used as designed in different settings? Does it matter?

- Validity: Can it be demonstrated in different settings?

- Relevance: Is the construct meaningful in different settings?

LONGITUDINAL MEASURES OF UNINTENDED PREGNANCY

As noted previously, there have been a small number of studies that have measured pregnancy intentions, contraceptive use dynamics and outcomes longitudinally. This number is small because of the significant resources required for creating and following panels of women over time. Participants at this workshop included researchers working with several health and demographic surveillance systems (HDSS) which, in principle, offer the opportunity to undertake such studies without the need to create a resource-intensive research system. An HDSS focusses "*on the populations of small, clearly delineated geographic areas. Central to all [HDSS] is continuous demographic surveillance, consisting of initial and repeat censuses of the chosen population, registering each individual resident and recording their associated information, such as socioeconomic and behavioural data. Health outcomes and vital events in the area are then linked to individual demographic records for precise, rather than estimated, data on fertility, morbidity, mortality and migration.*"[35]

Jim Phillips and **Cheikh Mbacké** provided an overview of the tremendous potential for HDSS to contribute to a more detailed understanding of fertility intentions, contraceptive use dynamics and outcomes, as well as to offering platforms for undertaking implementation research on health systems and service delivery approaches (see box). At the core of an HDSS is a relational structure for members of study populations with precise timing of individual level exposure to health threats, population changes, characteristics of individuals or social groups, or relationships among members, and exposure to interventions, as well as precise accounting of the "*risk to individuals*".

How HDSS can add value to existing research systems

The longitudinal study of populations through causal models:

- Experiments (epidemiological trials)

- Plausibility trials (policy studies)

- Data linkage: Cross-sectional studies with longitudinal HDSS endpoints

The longitudinal analysis of concomitant events

- Demographic interrelationships.

- Demographic and health interrelationships

- Hierarchical analysis of social or health systems

- Structural determinants of demographic processes

Methodological research

- Validation studies:

  - Preferences and their predictive power

  - Fertility and mortality measurement: Are DHS surveys producing valid indicators of basic demographic rates?

- Descriptive demography (e.g. model life tables)

- Longitudinal determinants' studies (birth intervals, verbal post-mortem, burden of disease, etc.).

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[35] Carrel M and Rennie S. 2008. "Demographic and health surveillance: longitudinal ethical considerations", Bulletin of the World Health Organization: 86:612–616.

They also noted several limitations of HDSS-based including: the need for sustained levels of funding over long periods of time; potential delays due to ensuring all procedures are followed ethically and effectively; limited representativeness of the HDSS populations and sites; likely obsolescence because of rapid improvements in technology and methodology; and the complexities of implementing routine cycles of data capture, correction, entry, error trapping, storage and migration mapping. They also proposed an exciting possibility to address these limitations through the creation of an "Open HDSS" model that would essentially be cloud-based, thereby allowing HDSS to be linked with cluster sample surveys and with HMIS, would enable paperless systems to reduce costs and time, and could use automated software generation.

Four examples were presented of HDSS and their experience with, or potential for, undertaking longitudinal research on fertility intentions and contraceptive use dynamics. **Kazuyo Machiyama** provided an overview of a study undertaken by LSHTM at the Karonga HDSS in northern Malawi that assessed the extent to which stated fertility intentions predict future reproductive outcomes[36]. The study collected data on women's prospective and retrospective fertility preferences three times in three years to assess the impact of unwanted births on family welfare. Measures of the intensity of fertility intentions were recorded, and the study also collected data from men, including the fertility intentions of polygynous men for each of their wives. The findings indicated good stability for prospective fertility intentions, with especially high predictive validity and spousal agreement on stated intentions to stop childbearing (which is consistent with findings from studies in Morocco, Egypt and Pakistan). Spousal agreement and the predictive validity of a desire to postpone childbearing were weaker however.

The Matlab HDSS in Bangladesh, implemented by the icddr,b, is the oldest and largest surveillance site in the world, and has been used extensively for research on fertility dynamics and family planning interventions. **Fauzia Huda** and **Anisuddin Ahmed** described the history and evolution of the HDSS to illustrate the benefits and challenges of sustaining such a large-scale, complex structure, which tracks the observation of five decades of a population of 225,000 living in 142 villages. In particular, they outlined the benefits of collecting data using hand-held tablets: fewer errors while collecting data owing to expedited data access permitting collectors to engage in real-time checks of the logical integrity of new information relative to archival records on family members in the database. Moreover, tablet technology facilitates the addition of new questions/ modules as needed; and facilitates the process of error trapping and management by supervisors. The experience and expertise developed over its long history has led Matlab to become a premier training resource for researchers interested in the application of HDSS technology to socio-demographic research.

The first urban HDSS in Africa, developed by APHRC in 2000, is the Nairobi Urban Health and Demographic Surveillance System in Kenya, which covers two informal settlement communities comprised of 66,000 residents. **Joyce Mumah** and **Clement Oduor** presented their experiences with the introduction of a fertility preferences module in 2012, which collected data on marriage, reproduction, sexual activity, contraceptive use and fertility preferences and which is updated annually. They described the questionnaire items used and the multiple challenges faced, both with implementing the module (logistical, cultural/religious, privacy) and with collecting data (availability of respondents, insecurity, monitoring data collection, internal and external migration, standardization for comparison).

A second urban HDSS, covering two formal and three slum districts with a combined population of almost 90,000, has been established in Ouagadougou, Burkina Faso by the Institut Supérieur des Sciences de la Population at the Université de Ouagadougou. **Abdramane Soura, Jacques Emina** and **Yacou Compaoré** gave an overview of the HDSS, noting distinct differences between the formal and informal populations, with the latter having much higher fertility levels and a younger age pyramid. Data on pregnancy intentions have been collected

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36 Machiyama K et al. 2015. op cit.

retrospectively after delivery and while these data can provide some useful insights, plans are already in place to improve data collection on unintended pregnancy by adding questions to measure ideal number of children, satisfaction with current parity, attitudes toward a pregnancy/ birth over the next 12 months, preferred time to the next pregnancy/birth, contraceptive use, partners' attitudes and intentions, and spousal communication.

With the rapid development of Health Management Information Systems (HMIS), and particularly the "District Health Information Software" (DHIS2) open source web-based application, there is the potential, in principle, to track fertility intentions and contraceptive use outcomes among individual FP programme clients. **Emmanuel Kuffour** and **Placide Tapsoba** presented a version of this technology – the Reproductive Services Log (rsLog) – that has been developed and is being rolled out in Ghana collaboratively by the Ghana Health Service and Population Council. While currently focused on capturing data on services and commodities provided by providers, there are opportunities to include additional information from clients (e.g. fertility intentions) and to track them individually through their interactions with the health system.

ENHANCING DECISION-MAKERS USE OF EVIDENCE ON UNINTENDED PREGNANCY

The underlying rationale for this meeting was that if reducing unintended pregnancy is a priority policy goal and investment outcome, and if service delivery programmes and health systems are to better meet the needs of women and couples to prevent unintended pregnancies, then the evidence available to inform their decisions has to be as strong as possible. While improving the quality and validity of the measurement of unintended pregnancy is critically important, there are numerous challenges to ensuring that this evidence is used by decision-makers.

Duff Gillespie challenged meeting participants to consider why policymakers infrequently base their decisions on evidence, defined here as research findings sufficiently strong that reasonable decisions can be based on them. He proposed three categories of reasons based on the literature, the experiences with an evidence-based, policymaker-centric advocacy project, *Advance Family Planning (AFP)*, and his personal experience as senior policymaker.

Policy-maker specific:
- Wrong Policymaker: Policymaker does not have the authority to act on evidence or to influence the correct policymaker.
- Many Policymakers: With decentralization there are often many policy makers that must act on evidence.
- Unaware of Evidence: Policymaker never sent evidence or never received evidence. Information overload is a common issue among policy makers.
- Short Tenure: Policymaker's tenure too short to act on evidence.
- Political Reservations: Common for policymakers to be risk adverse and to avoid decisions that could lead to political opposition.
- Personal Reservations: Evidence concerns issue that conflict with policymakers' values.
- Doubts Effectiveness of Intervention: Effectiveness of simple interventions is often doubted, e.g., Vitamin A, ORS, infant sleeping position (SIDS).

Research or researcher specific:

- <u>Evidence Not Presented in Policymaker Friendly Manner</u>: Presentation is very long, technically complex, and dense with jargon.
- <u>No Ask or Concrete Action</u>: Evidence is clearly presented but action based on evidence is not presented.
- <u>No quid pro quo</u>: Probability of policymaker using evidence is greatly increased if he/she benefits from a decision to use.
- <u>Wrong Messenger</u>: Person/s presenting evidence may not be suitable for effectively communicating with policymaker. Academics are often poor communicators with politicians.

Exogenous factors:

- <u>Insufficient Resources</u>: Action flowing from evidence exceeds policymakers wherewithal.
- <u>Competing Priorities</u>: Evidence-based action cannot compete with other priorities.

Gillespie concluded that the degree of control that researchers have over these three reasons varies, but awareness of all of them is critical to ensuring use of evidence.

NEXT STEPS

Following these presentations and discussions, participants reviewed the many topics and challenges that were raised during the meeting, and identified three priority actions that would both move the field forward substantively and be feasible with the resources currently available through STEP UP and participants' own organizations.

1. Prepare a protocol for a programme of research to develop and validate a multi-dimensional measure of unintended pregnancy that can be used across different settings. This would be the first cross-national, mixed-method study of pregnancy planning, the results of which will help national programmes to support women and their partners to attain their fertility goals, and will facilitate valid comparisons of the prevalence of unintended pregnancy between populations (to be submitted to a donor for potential funding).

2. Design and validate through pilot-testing a concise data collection instrument that can prospectively measure unintended pregnancy through a longitudinal study design with multiple rounds of cross-sectional surveys. The main feature of this instrument would be inclusion of several measures of the strength of fertility intentions to concerns raised by Casterline et al[37] about: a) motivation to avoid pregnancy; b) emotions; c) potential changes of intentions over time; and d) partner's preferences for pregnancy.

3. Design and validate through pilot-testing a questionnaire module that measures women's reasons for non-use of a modern contraceptive method. The initial version of this module would be designed for use in countries of East and Southern Africa where modern method use is dominated by short-acting hormonal methods (injectables and pills), use of traditional methods and condoms is low, and strong efforts are being made to increase acceptability, access to and use of long-acting reversible contraceptives (LARCs), i.e. implants, IUD and IUS. The module will be designed initially for use with cohabiting couples; a module for sexually active single people (primarily but not exclusively adolescents and youth) would necessarily include different items because of the nature of their relationship dynamics and sexual activity, concerns about STIs/HIV and pregnancy, and higher use of condoms and abortion. There is a possibility that this could be done in conjunction with the establishment and implementation of a longitudinal study of adolescents in

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[37] Casterline J, Perez A and Biddlecom A.1997. "Factors underlying unmet need for family planning in the Philippines", <u>Studies in Family Planning</u>, 28(3): 173-191.

Ouagadougou, Burkina Faso which is being supported by USAID through the Evidence Project. Moreover, a module for countries in West and Central Africa would require more items to gather data about traditional methods, which tend to be more commonly used. The Guttmacher Institute is currently conducting an exploratory quantitative survey of women's reasons for non-use in Ghana, with the hope that this will be replicated, together with a qualitative element, in other countries and lead to development of a questionnaire module that provides more information than the current DHS question. This work can also build on two current studies supported by the Evidence Project of contraceptive discontinuation and switching in Bangladesh and India.

4. Once pilot-tested, the module of reasons for non-use of, or unmet need for, family planning and the module on prospective fertility preferences could be combined into a single instrument that could be then be administered longitudinally to explore prospectively the associations between fertility intentions, the dynamics of contraceptive use, non-use, switching and discontinuation, and the fertility and health outcomes of unintended and intended pregnancies. Although these studies could be undertaken using a panel design with multiple surveys, integrating such a module into one or more HDSS would likely offer additional benefits in terms of cost-effectiveness, multi-site comparisons, and links with measures of related health and demographic factors. STEP UP is exploring the possibility of initiating such studies in Matlab and NUDHSS, subject to longer-term funding becoming available.

5. This instrument could also be applied to prospectively evaluate the impact of a family planning intervention through a controlled before-after design.

6. Review existing questionnaire items used to measure unintended pregnancy through retrospective questions on fertility intentions and develop a concise module that could potentially be used to standardize items in cross-sectional surveys and in regular data collection rounds of HDSS.

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The **STEP UP (Strengthening Evidence for Programming on Unintended Pregnancy) Research Programme Consortium** generates policy-relevant research to promote an evidence-based approach for improving access to family planning and safe abortion. STEP UP focuses its activities in five countries: Bangladesh, Ghana, India, Kenya, and Senegal.

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