Impact of Fertility Postponement on Waiting Time to Pregnancy and Reproductive Failure.

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EXTENDED ABSTRACT

Changes in the timing of first birth observed in the past decades in most of the developed and developing societies, are one of the most distinct characteristics of modern pattern of reproduction. This phenomenon described as postponement of reproduction manifests itself in constantly increasing age at birth of the first child both for males and females. Although increase in the age at birth of first child for females has been extensively analyzed in the context of social and economic causes and consequences, surprisingly little attention has been turned into biological consequences of late reproduction. This is partially caused by assumption that in low and lowest low fertility societies reproductive ageing might not constitute a major issue since most of females do not progress to higher parities. It is also caused by poor diffusion of tools which might be accurately used in large scales demographic surveys in order to precisely measure so-called reproductive ageing. Present study aims at presentation of methods for measurement of biological consequences of late reproduction in large scale retrospective surveys. It also adds new evidence on the relation between age at first reproduction and length of interval between onset of deliberate efforts to conceive and actual pregnancy (waiting time to pregnancy) or reproductive failure (unsuccessful attempt to conceive).

Most of the researchers, implicitly or explicitly, assume that in low or lowest-low fertility societies, decrease in number of children born to females in young age groups (20-25) due to postponement of reproduction, might be successfully compensated by reproduction in older age groups (26 and above and especially 30+). This assumption has been translated into recuperation effect that describes the extent to which couple (or individual) reach desired (in case of controlled fertility) or maximum number of children (in case of uncontrolled fertility) regardless of age at birth of the first child. In an extreme case, one can assume complete recuperation which means no effect of age at birth of the first child on maximum/desired number of children. In this case there is an implicit assumption that fecundity of both spouses is constant and does not change with age. In case of partial recuperation it is assumed that number of children born is highly dependent on age at birth of the first child not only due to social and economic constraints but mainly due to changes in fecundity.

The difference between complete and partial recuperation might not be so sharp in case of post-transitional societies (characterized by low or lowest-low fertility) where couples mostly give birth to one or two children. However the historical evidence from pre-transitional societies (characterized by high fertility) show that ultimate number of children being born by female is strongly dependent on age at first reproduction. However, the issue of partial (or non-complete) recuperation gains its significances from the perspective of debate on below replacement fertility in most of the European countries. Reaching the replacement level of fertility, requires an increase in the rate of second, thirds and even fourth order births. Therefore, apart of social and economic obstacles, late age at first reproduction might constitute a serious problem in reaching level of TFR around 2,1 and above, even in the context of improvements in assisted reproduction technologies (Leridon 2004). Moreover, late

attempts to become a parent might lead to delayed diagnosis of sub-fertility and thus leave less time for medical intervention and decreases chances for successful use of ART.

This assumption does not hold in societies with high average number of children per female and lack of efficient fertility control. In such case age at first reproduction is absolutely crucial with respect to completed fertility. This is of course related to the length of reproductive span as well as to the varying level of female fecundity during lifetime. Apparent fecundability reaches its' peak at age 22 and decreases quickly afterwards: fecundity at age 32 equals fecundability at age 15. Thus, shift in reproductive schedule from age of 22 (as at the end of first demographic transition) to age of 30 (as it is at the moment) might result not only in lower parity progression ratios to higher births order (especially for births third and higher) but also in rising share of couples having problems with conceiving second or even first child. Therefore, it might be argued that age at birth of first child constitutes a major limit to completed fertility in a non-contraceptive societies but also in modern societies where subfertility and even infertility might constitute a growing problem not only form individual but also form social perspective. It has to be underlined that decrease in fecundity is not restricted solely to females. Males, although this is much less explored, also suffer from sub-fertility. Therefore, we stress that analysis of modern reproductive patterns has to be extended beyond the perspective of social and economic causes and consequences. We have to be aware that limits to ultimate number of children are not only set by individual decisions (related to social and economic constraints) but also to biological potential to reach intended family size. Thus, postponement of reproduction to older ages might result in biological consequences such as increase in incidence of subfecundity, increase in incidence of miscarriages or fetal malformation. On the other hand, these biological consequences might translate into demographic consequences such as increase in proportion of involuntary childless, number of children below planned (lower quantum) and problems with reaching replacement level of TFR (on macro level).

In order to account for subfertility and infertility in a large scale demographic survey it is not possible to use detailed clinical methods which allow diagnosing problems with conception. Alternatively, we may use indirect measures to account for sub- and infertility. This methodology is used in retrospective surveys and uses number of ovulatory cycles needed for conception. According to this approach after six unsuccessful cycles a couple is denoted as slightly sub-fertile, 12 unsuccessful cycles denotes moderate or serious sub-fertility and 48 unsuccessful cycles means absolute sterility (Gnoth 2005, Habbema 2004). This approach is coherent with methodology proposed to measure so-called waiting time to pregnancy. Measurement of waiting time to pregnancy has been operationalized via short questionnaire (often self-administered) in which female respondents are asked about number of ovulatory cycles between first deliberate attempt to conceive and actual pregnancy. Since the questionnaire is usually a part of a larger scale survey researchers have a possibility to include many explanatory variables related to socio-economic context and contraception.

Above methodology has been incorporated into the first wave of the GGS survey carried out in Poland in 2011. In the standard section of fertility module in GGS we have added a set of questions concerning waiting time to pregnancy (measured as number of ovulatory cycles form the start of conscious attempts to conceive), history of contraception, information concerning diagnosed subfertility or infertility of both spouses (along with information concerning use of ART). Incorporation of this module allows analysis of waiting time to pregnancy with use of methods of event history analysis with use of many explanatory variables present in standard GGS. It also allows accounting for scale of sub-fertility (infertility) problems in population and its' possible effect on aggregated fertility measures.

The analyses are aimed at capturing the relationship between age at first pregnancy (birth) and waiting time to pregnancy. Main hypothesis states that there is a positive relation

between age at pregnancy (birth) and waiting time to pregnancy. According to many evidence waiting time to pregnancy (measured from the start of conscious attempts to conceive) should increase with age (starting from maximum biological fecundity at age 22) ultimately leading to interval above 48 months which marks sterility (Toulemon, 1996; Jensen, 2005). Therefore, using the techniques of event history analysis it is possible to reconstruct curves representing the hazard (survival) function for various age groups over time interval from start of attempts to conceive up to 48 months. The pilot study reveals that more than 70% of couples conceive within 3 ovulatory cycles of unprotected intercourse, although we observe a significantly lower rate of success (longer duration) for females over age of 30. Further, we aim at extension of the analysis in order to capture the effect of previous contraception and socio-economic variables on the waiting time to pregnancy. Thanks to the information concerning diagnosed sub- or infertility the analysis allows to account for the share of individuals involuntarily childless. Along with the information on voluntary childlessness it gives the opportunity to analyze and decompose rates of childlessness by age and motives.

Discussion of the results includes considerations concerning the effects of sub-fertility and reproductive failure on the increase in rates of involuntary childlessness and decrease in parity progression ratios. Furthermore we relate these issues to below replacement TFR and possible effects of reproductive ageing and late fertility on TFR.

Literature

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