

A Study of the Effect of Number of Births on the Disability Status of China's Elderly Women

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Abstract

Purpose

Under the background of aging population, the disability of the elderly is more serious, and childbirth affects the health status of elder women. The aim of this paper was to examine the relationship between the number of births and the risk of maternal disability in later life.

Methods

Based on data from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018, 4,686 elder women were selected as study population. The logistic regression analysis was conducted to estimate the effect of number of children and other fertility behaviours on the risk of disability and to test whether there were urban-rural differences and gender differences.

Results

A high number of births significantly reduced the risk of disability among elder women. For each additional birth, the odds ratio of maternal disability in later life decreased by 4.3%, especially elder women with fewer than five births. Heterogeneity analysis found that this effect was present in the urban areas, and that an increase in the number of births increased the probability of disability for both fathers and rural mothers, but this result was not significant. Further examination showed that later age at last birth and longer childbearing period both significantly reduced the probability of disability.

Conclusions

This paper found an association between early fertility behaviour and the risk of disability in later life. We need to promote urbanisation and to have children within the right limits, not too many, and improve relevant supporting measures to ensure the health of female elderly in later year.

1. Introduction

With the gradual implementation of “comprehensive three-child” policy in China, the topic of childbirth and women's health have once again been the subject of much academic debate. As the main bearers of childbirth, women are directly affected by this policy. The focus on fertility and health has important implications for the promotion of gender equality and the protection of women's rights in society, and provides important public opinion support for the improvement of relevant health policies on aging and the promotion of women's health. According to relevant data, the proportion of elderly women in the population is increasing, but the self-rated health of elderly women is worse than that of elderly men

(Song, 2016), and elder women's health is also associated with antenatal care during childbirth (Klemetti, 2011).

In a longitudinal multicentre survey of 732 women in France and 623 women in Italy at 5 and 12 months after childbirth, after statistical analysis using SAS and SPSS respectively, it is found that women's physical and emotional problems persisted after childbirth and increased over time(M Saurel-Cubizolles,2015). Some scholar conducted a survey of 1212 women and 1105 partners in Beijing by collecting data late in pregnancy to observe two months and one year postpartum, and found women's physical, emotional and self-rated health are affected by pregnancy and the first year of maternity, and new fathers' emotions are negatively affected in the first year(Schytt,2011). The possible increased risk of chronic disease associated with childbearing has been widely discussed. It is suggested that reproductive factors have been independently identified as a risk factor for coronary heart disease following a multivariate Cox proportional risk regression analysis on data from the WHI observational study of 72982 samples recruited from 1991(Parikh,2016). Through conducting a multinomial logistic regression analysis to examine cross-sectional associations between cain and 18 cardiovascular health scores from survey data of 3430 women aged 45-84 years in the USA, it showed that being prolific was associated with poorer correlations(Ogunmoroti,2019). It was found that first pregnancy and consecutive pregnancies were associated with savings and clinically relevant reductions in systolic and diastolic blood pressure by using a mixed-effects linear spline model comparing blood pressure trajectories of 23438 women in Norway(Haug,2018). In addition, some research has found that childbirth may also carry an increased risk of cancer in women. Early pregnancy, multiple pregnancies and childbirth increased the risk of gallbladder cancer through a case-control study of 64 patients with newly diagnosed gallbladder cancer and 101 patients with gallstone disease(Pandey,2003). The results of a parity test examining the effect of fecundity (number of children born alive) on the risk of death from 20 common cancers showed that the effect of fecundity on the risk of death from cancers of the stomach, liver, gallbladder, breast, cervix, and ovary was relatively significant ($p<0.001$) by conducting a case-control study(Plesko,1985). It is found that gestational births would reduce mortality from ductal and lobular breast cancer, and that the number of full-term births rather than age at first birth had an effect on both breast cancer specificity and overall mortality(Anderson,2011). An association between fertility and obesity has also been found by scholars. It is found that significantly higher rates of obesity among primiparous women aged 18-50 years than among unborn and multiparous women by using a nationally representative cross-sectional National Health and Nutrition Survey (NHNS) mobile phone to conduct a multivariate logistic regression analysis of 6857 women aged 10-50 years from 2001 to 2010(Moniz,2014).

A review of the literature reveals that, firstly, most studies have focused on the effects of childbearing on maternal health, particularly on psychological health and physical health, while relatively little research has been conducted on whether childbearing has an effect on women's disability, leaving room for further expansion. Secondly, there are few studies on the impact of the number of births on the risk of disability in elderly women, Finally, the mechanism between fertility behaviors and disability risk of Chinese elderly women needs to be improved.

In contrast to previous studies, the innovation of this paper is to focus on the effect of number of births on the risk of disability among elder Chinese women and the differences in the effect, and further examine the relationship between other fertility behaviours and mothers' risk of disability in later life. The framework is as follows: firstly, to examine the effect of number of births on the risk of disability among elder women in China, secondly, to conduct heterogeneity analysis in urban and rural sample and gender sample respectively to explore the difference in the effect of high parity on the risk of maternal disability in later life, finally, to further investigate the effect of other fertility behaviours on the risk of disability among elder women.

2. Methods

2.1 Data

The data used in this paper are derived from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018, a follow-up survey of the factors influencing health in elder people in China. The survey project (1998-2018) covers 23 provinces, municipalities and autonomous regions across China, and is the earliest and longest running social science survey in the country. Questionnaire of surviving interviewees covers basic information about the elderly and their families, economic sources and economic status, self-assessment of health and quality of life, psychological characteristics, treatment of illness and lifestyle. Combined with the research content, elder women aged 65 and above are selected as the study population. After excluding the unrelated variables and missing values, the final number of samples was 4686, including 1981 rural female samples, accounting for 42.27% of the total samples, there are 2705 urban female samples, accounting for 57.73% of the total samples.

2.2 Variable settings

2.2.1 Dependent variable

The disabled state of elderly women is selected as the dependent variable. The number of births and other fertility behaviours may influence their disabled state in later life through some physical or social channels. The definition of disabled state is generally based on the KATZ scale, a system proposed by Katz et al., which measures the independence of elder people in completing six daily activities: bathing, dressing, toileting, bed and chair transfer, defecation control and eating. If an elderly person needs help when completing an activity, it is considered that his ability to perform the activity is limited.

The questionnaire provides a six-item self-care scale: waking up, eating, dressing, bathing, defecation and indoor activities. If an elder person is unable to perform one of these activities independently or has limitations, he is considered to be disabled and the value is 1. If they can perform all of these activities independently, they are considered to have no physical impairment and the value is 1.

2.2.2 Independent variable

The number of births is selected as the core explanatory variable and it should be noted that the adopted children are not included. In the questionnaire, respondents are asked "How many children have you had in your lifetime (including those who have died)", which measures both the physiological impact of the number of births and the impact of the number of children on intergenerational support. The vast majority (87.58%) of respondents have six or fewer children, which is consistent with the reality of the situation. The influence of other fertility behaviours is further explored by adding age at first birth, age at last birth, childbearing period and birth interval as supplements.

2.2.3 Control variables

Based on the research content and around the life activity status of elder people, nationality, age, residence, exercise, smoking and drinking, health satisfaction, life satisfaction, sleep quality, healthcare knowledge and total family income of last year are included in the control variables. Among them, nationality, residence, exercise, smoking and drinking and healthcare knowledge are set as dummy variables. For nationality, Han nationality is assigned a value of 1, the respondents living in town are assigned 1, the respondents who often exercise are assigned to 1, "do you often drink now" and "do you smoke now" are used to measure the smoking and drinking status of the respondents and the answer "yes" is assigned to 1, the respondents are asked whether the community provided health care knowledge and the answer "yes" was assigned to 1. For others, the respondents' responses to their sleep quality are assigned an integer between 1 and 5. The answers to your satisfaction with your life and health are assigned to integers between 1 and 5. The smaller the number, the more satisfied the respondents are. The living standard of the respondents is measured by the question "what was the total income of your family last year".

2.3 Model setting

As dependent variable in this paper is a binary variable, a logistic regression model is chosen for analysis. The model is as follows:

$$Disability_{it} = \alpha_0 + \alpha_1 CB_{it} + \alpha_2 X_{it} + \phi_{it} \quad (1)$$

In equation (1), $Disability_{it}$ indicates the disability status of the respondents in a certain period of time, CB_{it} (Childbearing Behavior) refers to the reproductive behavior of the respondents in a certain period of time, including the total number of births, age at first birth, age at last birth, childbearing period and birth interval, X_{it} represents other control variables, ϕ_{it} represents the random error term, α_1 is the coefficient to be estimated in this paper, which reflects the impact of the number of births and other reproductive behaviors on disability in elderly women.

3. Results

3.1 Descriptive analysis

Table 1 reports the results of the descriptive statistical analysis of urban and rural samples. 25.80% of elder people in the full sample are in disability and the disability rate of urban elderly women is higher than that of rural elderly women. The mean number of births in the sample is around four, with rural women having more births than urban women, the age at first birth is about 23 and the age is slightly higher for urban women than for rural women, the age at last birth is about 34 and the average age at last birth is higher for rural women, the average childbearing period is around 11.43 years and rural women have a slightly longer period, the average birth interval is 2.59 years. For control variables, the average age of the selected samples is 84.57 years old, and the Han nationality accounted for 94.36% and 57.73% of the elderly women lived in cities and towns. Less than one third (30.47%) of the elderly women would exercise regularly. Only 9.66% of the samples would smoke and drink. 45.48% of the elderly women are satisfied with their current health status.

Table 1 Descriptive statistics.

| varname | Full Sample Mean/% | Rural Sample | | Urban Sample | | Mean- Diff | T-Value |
|---------------------------------|-----------------------|--------------|--------|--------------|--------|---------------|---------|
| | | obs | mean | obs | mean | | |
| Dependent variable | | | | | | | |
| Disability state (1=yes) | 25.80% | 1981 | 23.90% | 2705 | 27.20% | -0.032** | -2.509 |
| Independent variable | | | | | | | |
| Number of births | 4.10 | 1664 | 4.431 | 2403 | 3.865 | 0.567*** | 8.647 |
| Age at first birth | 22.91 | 1606 | 22.565 | 2329 | 23.145 | -0.580*** | -4.435 |
| Age at last birth | 34.26 | 1568 | 35.365 | 2255 | 33.488 | 1.877*** | 8.303 |
| Childbearing period | 11.43 | 1567 | 12.839 | 2253 | 10.449 | 2.390*** | 9.914 |
| Birth interval | 2.59 | 1564 | 2.785 | 2248 | 2.461 | 0.324*** | 6.271 |
| Control variables | | | | | | | |
| Nationality (1=Han) | 94.36% | 1685 | 92.40% | 2426 | 95.70% | -0.033*** | -4.533 |
| Age | 84.57 | 1977 | 84.998 | 2705 | 84.260 | 0.738** | 2.181 |
| Residence (1=Urban) | 57.73% | 1981 | | 2705 | | | . |
| Exercise (1=yes) | 30.47% | 1914 | 23.90% | 2632 | 35.30% | -0.114*** | -8.292 |
| Smoking and drinking (1=yes) | 9.66% | 1886 | 9.50% | 2584 | 9.80% | -0.002 | -0.233 |
| Health satisfaction | 2.58 | 1932 | 2.602 | 2670 | 2.572 | 0.030 | 1.116 |
| Life satisfaction | 2.09 | 1937 | 2.145 | 2671 | 2.047 | 0.098*** | 4.192 |
| Quality of sleep | 2.58 | 1923 | 2.617 | 2654 | 2.559 | 0.058* | 1.956 |
| healthcare knowledge (1=yes) | 41.03% | 1871 | 39.00% | 2621 | 42.50% | -0.034** | -2.317 |
| Total family income(ln) | 9.89 | 1838 | 9.480 | 2586 | 10.183 | -0.703*** | -13.987 |

^a * p < 0.10, ** p < 0.05, *** p < 0.01.

3.2 Regression results

Table 2 reports the logistic regression results of the impact of number of births on the disability state of elderly women. Model 1 shows that for each additional birth in the full sample, the odds ratio of maternal disability in later life decreases by 4.3% and the result is significant at the 5% level. Model 2 shows that for each additional birth in the sample of less than 5 children, the odds ratio of maternal disability in later

life decreases by 10.2% and the result is significant at the 5% level. Model 3 shows that when the number of births is 5 or more, the odds ratio of maternal disability decreases by 6.6% for each additional child, but the result is not statistically significant. Therefore, the more number of births will reduce the risk of disability of the elderly women in China to a certain extent, mainly reflected in the group of mother with less than 5.

As for other control variables, according to model 1, the odds ratio of maternal disability will increase by 10.4% when the age increases by one year, and the result is significant at the level of 1%, compared with the elderly women living in rural areas, the odds ratio of disability of urban mothers will increase by 26.5%, the odds ratio of mothers who exercise regularly will be significantly reduced by 31.1%, while that of mothers who smoke and drink will be increased by 3%.

Table 2 Estimates of the effect of number of births on disability in older women

| | Model 1 | | Model 2 | | Model 3 | |
|-----------------------------------|----------------------|-------------------|----------------------|-------------------|---------------------|-------------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Number of births | -0.044** (0.022) | 0.957** 0.021 | | | | |
| Number of births (less than 5) | | | -0.107** (0.053) | 0.898** 0.048 | | |
| Number of births (5 and more) | | | | | -0.068 (0.049) | 0.934 0.044 |
| Nationality | 0.462* (0.236) | 1.587* 0.335 | 0.359 (0.346) | 1.432 0.427 | 0.565* (0.318) | 1.759* 0.531 |
| Age | 0.099*** (0.005) | 1.104*** 0.005 | 0.093*** (0.006) | 1.098*** 0.006 | 0.111*** (0.009) | 1.118*** 0.009 |
| Residence | 0.235** (0.093) | 1.265** 0.118 | 0.337*** (0.130) | 1.401*** 0.184 | 0.102 (0.136) | 1.107 0.151 |
| Exercise | -0.372*** (0.110) | 0.689*** 0.075 | -0.398*** (0.143) | 0.672*** 0.095 | -0.362** (0.177) | 0.696** 0.119 |
| Smoking and drinking | 0.029 (0.148) | 1.030 0.151 | -0.243 (0.213) | 0.784 0.166 | 0.355 (0.218) | 1.426 0.302 |
| Health satisfaction | 0.319*** (0.060) | 1.375*** 0.081 | 0.234*** (0.080) | 1.264*** 0.099 | 0.436*** (0.096) | 1.547*** 0.142 |
| Life satisfaction | -0.156** (0.068) | 0.856** 0.057 | -0.096 (0.092) | 0.908 0.080 | -0.254** (0.105) | 0.776** 0.081 |
| Quality of sleep | -0.045 (0.048) | 0.956 0.046 | -0.009 (0.064) | 0.991 0.063 | -0.108 (0.075) | 0.898 0.066 |
| Healthcare knowledge | 0.149* (0.089) | 1.160* 0.104 | 0.201* (0.120) | 1.222* 0.147 | 0.049 (0.136) | 1.051 0.144 |
| Total family income | 0.050* (0.050) | 1.051* 0.051 | -0.010 (0.051) | 0.990 0.050 | 0.096** 0.049 | 1.101** 1.051 |

| | | | | | | |
|---|---------|-------|---------|-------|---------|-------|
| | (0.028) | 0.029 | (0.041) | 0.041 | (0.037) | 0.042 |
| N | 3545 | 3545 | 2187 | 2187 | 1358 | 1358 |

^a* p < 0.10, ** p < 0.05, *** p < 0.01, ^b standard errors are reported in parentheses.

3.3 Heterogeneity analysis

Due to the possible differences in the impact of fertility behaviors on the health of Chinese men and women and the obvious characteristics of the urban-rural dual structure of Chinese society, this part will further investigate the relationship between number of births and disability risk to test whether there are urban-rural differences and gender differences. The results are shown in table 3 and table 4.

According to the results in the previous section, a high number of births significantly reduces the risk of disability among elder women, and this conclusion is also applicable in the urban sample. Model 4 shows that for every increase in the number of births, the odds ratio of disability of urban mothers will decrease by 0.8%, and the result is significant at the level of 1%. However, different result is found and not significant in the impact of the number of births on rural mothers. Model 5 shows that for every increase in the number of births, the odds ratio of disability will increase by 0.4%.

Table 3 Urban-rural differences in the effect of number of births on disability in elder women

| | Model 4 | | Model 5 | |
|----------------------|-------------|--------------------|-------------|--------------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Number of births | -0.080*** | 0.992*** | 0.004 | 1.004 |
| | (0.028) | 0.026 ^a | (0.035) | 0.034 ^a |
| Nationality | 0.496 | 1.642 | 0.428 | 1.534 |
| | (0.358) | 0.493 ^a | (0.308) | 0.459 ^a |
| Age | 0.100*** | 1.105*** | 0.099*** | 1.104 |
| | (0.006) | 0.006 ^a | (0.007) | 0.008 ^a |
| Residence | -0.451*** | 0.637*** | -0.249 | 0.780 |
| | (0.134) | 0.085 ^a | (0.191) | 0.145 ^a |
| Exercise | 0.073 | 1.076 | -0.011 | 0.989 |
| | (0.190) | 0.200 ^a | (0.233) | 0.238 ^a |
| Smoking and drinking | 0.243*** | 1.275*** | 0.433*** | 1.542 |
| | (0.074) | 0.095 ^a | (0.102) | 0.149 ^a |
| Health satisfaction | -0.100 | 0.905 | -0.238** | 0.788 |
| | (0.086) | 0.077 ^a | (0.111) | 0.086 ^a |
| Life satisfaction | -0.071 | 0.931 | -0.005 | 0.995 |
| | (0.060) | 0.056 ^a | (0.080) | 0.078 ^a |
| Quality of sleep | 0.108 | 1.113 | 0.197 | 1.218 |
| | (0.114) | 0.128 ^a | (0.146) | 0.179 ^a |
| Healthcare knowledge | 0.071* | 1.074* | 0.021 | 1.022 |
| | (0.040) | 0.041 ^a | (0.039) | 0.042 ^a |
| _cons | -10.734*** | 0.000*** | -11.177*** | 0.000 |
| | (0.851) | 0.000 ^a | (0.971) | 0.000 ^a |
| N | 2124 | 2124 | 1421 | 1421 |

^a* p < 0.10, ** p < 0.05, *** p < 0.01, ^b standard errors are reported in parentheses.

Table 4 shows the gender differences in the effect of the number of births on the risk of disability. It can be seen from model 6 that for every increase in the number of births, the odds ratio of mother's disability

will be significantly reduced by 4.3%, while Model 7 shows that for every increase in the number of births, the odds ratio of father's disability will be increased by 1.8%, but the result is not statistically significant.

Table 4 Gender differences in the impact of number of births on disability in elder people

| | Model 6 | | Model 7 | |
|-------------------|---------------------|------------------|----------------|----------------|
| | Coefficient | Odds Ratio | Coefficient | Odds Ratio |
| Number of births | -0.044** (0.022) | 0.957** 0.021 | 0.018 0.027 | 1.018 0.029 |
| Control variables | Yes | Yes | Yes | Yes |
| N | 3545 | 3545 | 3134 | 3134 |

^a* p < 0.10, ** p < 0.05, *** p < 0.01, ^b standard errors are reported in parentheses.

3.4 Further analysis

Existing studies have shown that, for women, in addition to the number of births, other fertility behaviors will also affect their disability risk. Therefore, this paper further examines the impact of other fertility behaviors on the risk of disability in later life.

Table 5 reports the estimated effects of age at first birth, age at last birth, childbearing period and birth interval on mothers' risk of disability in later life. Model 8 shows that for every one year addition the age that the mother gives birth to the first child, her disability risk ratio will increase by 0.3%, but the result is not significant. As shown in model 9, for every one year addition the age at last child, the odds ratio of disability will be reduced by 1.3% and the result is significant at the level of 10%. Model 10 shows that when mothers'childbearing period is extended by 1 year, the odds ratio of disability decreases by 1.1%. Model 11 shows that the longer the interval between births, the lower the risk of disability in the mother.

Table 5 Estimates of the impact of other fertility behaviours

| | Model 8 | Model 9 | Model 10 | Model 11 |
|---------------------|-----------------|------------------|------------------|-----------------|
| Age at first birth | 1.003 0.011* | | | |
| Age at last birth | | 0.987* 0.007* | | |
| Childbearing period | | | 0.989* 0.007* | |
| Birth interval | | | | 0.983 0.029* |
| Control variables | Yes | Yes | Yes | Yes |
| N | 3454 | 3358 | 3357 | 3349 |

^a Odds ratios are reported in the table, ^b * p < 0.10, ** p < 0.05, *** p < 0.01.

Similarly, we further investigate the differences between urban and rural areas and the results are shown in Table 5. Models 12 and 16 show the effect of age at first birth on the risk of maternal disability in later life, with a 0.7% increase in the odds ratio for urban mothers and a 0.6% decrease in the odds ratio for rural mothers for each year of delay in the first birth, but this result is not significant. Model 13 and Model 17 show that when giving birth to the last child, every subsequent one year postponed, the odds ratio of disability for mothers living in cities and towns will decrease by 1.7%, while the odds ratio for rural mothers will decrease by 0.8% but the result is not statistically significant. The results of model 14 show for each additional year of childbearing period for urban mothers, the risk of disability is reduced by 1.7% and this finding applies equally to the sample of rural women. According to Model 15 and Model 19, the results show that the longer the interval between having children, the lower the mother's risk of disability.

Table 6 Urban-rural differences in the impact of other fertility behaviours

| | Urban | | | | Rural | | | |
|---------------------|-----------------|------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| | Model 12 | Model 13 | Model 14 | Model 15 | Model 16 | Model 17 | Model 18 | Model 19 |
| Age at first birth | 1.007 0.013* | | | | 0.994 0.018* | | | |
| Age at last birth | | 0.983* 0.009* | | | | 0.992 0.012* | | |
| Childbearing period | | | 0.983* 0.009* | | | | 0.996 0.012* | |
| Birth interval | | | | 0.992 0.036* | | | | 0.967 0.053* |
| Control variables | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 2070 | 2005 | 2004 | 1999 | 1384 | 1353 | 1353 | 1350 |

^a Odds ratios are reported in the table, ^b * p < 0.10, ** p < 0.05, *** p < 0.01.

4. Discussion

4.1 Having more children significantly reduces the probability of disability in elder women, especially in urban areas.

The impact of childbearing on elder women's health is manifested in three main ways: firstly, childbearing negatively affects women's health by affecting their social interactions, social support and social participation, secondly, childbearing negatively affects women's health in later life by affecting their physical health, thirdly, childbearing negatively affects women's health by affecting their children's financial support, emotional comfort and care for them. Compared to rural women, urban women have higher levels of social participation and support due to their jobs and careers, which in turn has less of a negative impact on the health of older women by reducing their social participation and support, urban women are more likely to have maternity insurance, better economic conditions and greater access to health services, which in turn has less of an impact on their health due to childbirth. Having more children increases the financial support, moral comfort and care for parents in their later years, with more financial support, which in turn has a positive effect on women's psychological and physical health, in summary, a high number of births reduces the probability of women becoming disabled. Still, the number of children should not be infinitely high. When the number of children is too much of a squeeze on women's social

participation, it causes irreversible damage to women's health, and of course after the number of children is high, mutual shirking and conflicts between children in later life can affect the health of older people.

4.2 Having more children increases the probability of men disability in later life, but the effect is not significant.

Why does a high number of births have an insignificant effect on disability for both rural and urban men, and why does it even appear to increase the probability of disability? Based on the above analysis, having more children does not significantly affect men's social participation and access to social support, and even promotes greater social participation because too many children trigger excessive labour force participation, having too many children does not have a cumulatively significant negative impact on men's health due to childbearing, as it takes only a short time for men to complete a birth, but women usually carry a child for 10 months. However, too many children require material resources to raise them, which can contribute to high levels of male labour stress, and the long-term accumulation of this stress into later life can in turn trigger male disability in old age.

4.3 The later age at last child and the longer childbearing period, the lower the probability of disability in later life.

This means that if we are still having children at a very old age, this means that we are in good health during our own childbearing years and this health will accumulate in later life, while we have more children, have children later and pay more attention to our health in order to be able to raise our children until they able to raise the child into adulthood. Why is this significant for towns, where women marry at a later age and have children at a later age, compared to rural women, given that town women are a little healthier, so it is likely that town women have children later and town women are healthier.

5. Conclusion

On the basis of existing related studies, this paper uses logistic regression model to empirically examine the effects of number of births and other fertility behaviours on the risk of maternal disability in later life and the differences in effects. In a time of increasing urbanisation, decreasing fertility levels year on year and increasing ageing, one of the reasons for the population's reluctance to have children is the perception that childbearing may have a negative impact on well-being in later life. This study finds that childbearing does not always have a negative impact on later life welfare, and even that a high number of births reduces the probability of incapacity in older women, especially for urban women. The implication of this finding for us, the public, is that if we have more children, we are less likely to become disabled in later life. This suggests to the government and the public that we should do more to inform people that having more children at a younger age makes them less likely to become disabled in later life. However, this finding is only true for urban women and for those with fewer than five children, which means that in developing countries, such as Africa, where fertility levels are relatively high, having too many children not only does not reduce the probability of disability in later life, but, as the article finds, may even increase the probability of disability in later life for older women. This also suggests to governments that in order

to reduce the impact of fertility on the probability of disability in later life, we need to promote urbanisation and to have children within the right limits, not too many.

Declarations

Ethics approval and consent to participate

The CLHLS study was approved by the research ethics committee of Peking University (permission# IRB00001052–13074), and all participants or their proxy respondents provided written informed consent after thoroughly explaining the research contents and results involved. The study was conducted according to the guidelines of Declaration of Helsinki and all methods were carried out in accordance with Declaration of Helsinki. All participants expressed informed consent to participate in the study.

Consent for Publication

Not applicable.

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no conflict of interests.

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Authors' contributions

SZ and HLY conceived this research. HLY, SZ and YDY was responsible for the methodology. SQZ and ZS conducted software analyses. ZS, SZ and YYW conducted necessary validations. SZ conducted a formal analysis and managed the investigation. YDY, SZ and LX gathered resources, curated all data, wrote/prepared the original draft, and were responsible for project administration. LX and ZYL reviewed and edited the manuscript, were responsible for visualization, supervised the project, and acquired funding. All authors contributed to the article and approved the submitted version. All authors reviewed the manuscript.

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