

RESEARCH ARTICLE	The age of first marriage and its impact on fertility in Algeria	
Guettari Asmaa	Reseracher	
	Laboratory of Population and Sustainable Development in Algeria	
	University Oran2 Mohamed Ben Ahmed	
	Algeria	
	Email: guettariasmaa@gmail.com	
Louadi Tayeb	Researcher	
	Laboratory of Population and Sustainable Development in Algeria	
	University Oran2 Mohamed Ben Ahmed	
	Algeria	
	Email: louadi2005@yahoo.fr	
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Abstract		
<p>This article aims to study the relation between the age of first marriage and fertility in Algeria due to the important role of marriage in the evolution of fertility levels by describing and analyzing the change in the phenomenon of marriage and fertility by relying on various sources of demographic data. This study showed that the delay in the age of first marriage, which was the result of several factors, including the high educational level of both sexes, women's entry into the labor market, and the duration of marriage, has a direct impact on the average number of children a woman has.</p>		
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1. Introduction:

Marriage is one of the most important demographic and social phenomena in all societies because it is the only way to procreate and build a family legally, meaning that the phenomenon of marriage has a major role in explaining fertility levels and their changes and is considered the main driver of them, as it directly affects reproduction by reducing or extending the duration of marriage and its consequences on reproduction, not to mention the possibility of not marrying and forming a family, which is called final celibacy. The phenomenon of marriage in Algeria, as in most societies, has undergone a clear and obvious change influenced by social, economic and cultural changes, which resulted in a delay in the age of first marriage for both males and females, and this factor has a direct impact on fertility levels. Therefore, the issue of the study is focused on the extent of the impact of the age of first marriage on the level of fertility in Algeria.

The study aims to provide an overview of the phenomenon of marriage and fertility in order to know the trend of the age of marriage according to some demographic and social variables, in addition to analyzing fertility trends and some of its indicators, and showing the impact of the age of first marriage on the level of fertility through various

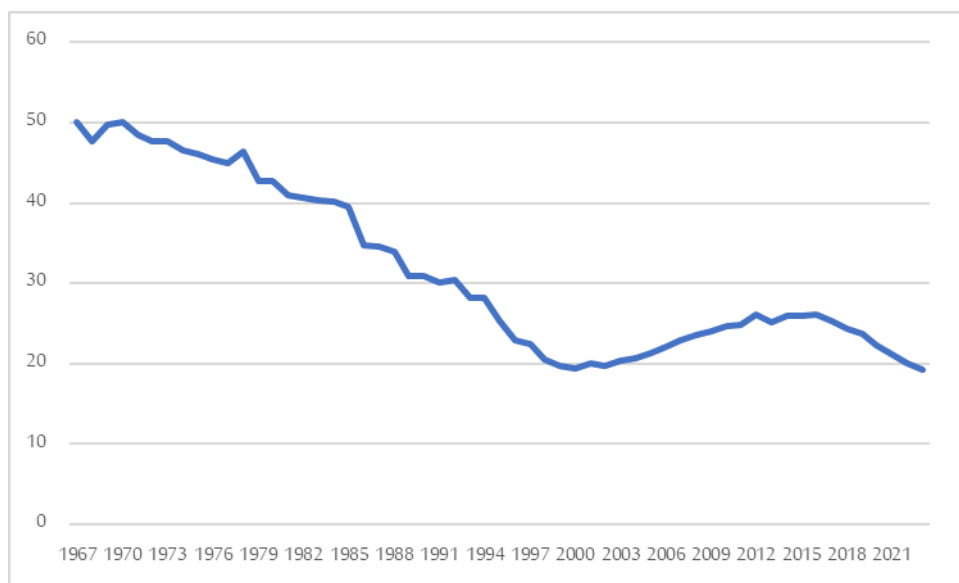
survey data. The method used in this study is the descriptive-analytical method, which aims to study and analyze various indicators related to the phenomenon of marriage and fertility.

2. Fertility trends in Algeria:

2.1 Evolution of the crude birth rate in Algeria:

Algeria knew an increase in the birth rate, especially after independence, reaching 50.12‰ in 1967, as a result of the improved standard of living and health and the adoption of a policy of encouraging births in order to compensate for the human losses during the Liberation Revolution. In addition to the high percentage of women in the reproductive age and their early marriage, as well as the widespread culture of the extended family that encourages having many children and high fertility, which led to an increase in the level of births, the birth rate began to decline in the early eighties, where the rate was estimated at 42.7‰, and in the second half of the eighties, the birth rate began to decline continuously as the crude birth rate in 1986 was estimated at 34.73‰ after 39.5‰ in 1985 and 42.7‰ in 1980 to arrive at 19.36‰ in 2000, the birth rate decreased by 51% as a result of Algeria's adoption of the National Population Growth Control Programme in 1983 and the political instability resulting from the Black Decade was reflected in the overall decline in marriage, births and population migration (Ali Kouaouci and Saadi Rabah, 2013, p.101). This continuous decline in the birth rate in this period confirms Algeria's entry into the second phase of the demographic transition and the trajectory of the birth rate has been characterized by a return to rise since 2001, which is opposite to the theory of demographic transition, which is based on a decrease in both births and deaths in the last phase of the demographic transition, where it increased by 35% during the period 2000-2016, estimated at 19.36‰ in 2000 and 26.12‰ in 2016, to know a decrease in recent years to reach 19.32‰ in 2023.

Figure 01: Evolution of the crude birth rate in Algeria, 1967-2023.



Source : rétrospective statistique 1962-2011.

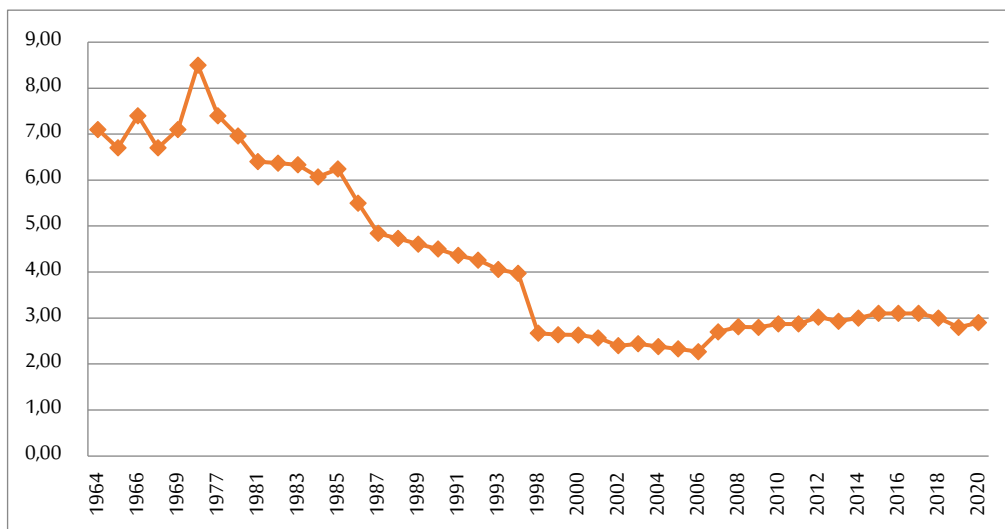
Démographie algérienne 2016, N° 890, ONS.

Démographie algérienne 2020-2023, N°1030, ONS.

2.2 Evolution of The Synthetic Fertility Index:

The Synthetic Fertility Index, which represents the average number of children a woman has during her reproductive period (15-49 years), has seen a significant decline, along with other indicators such as births and overall fertility.

Figure 02: Evolution of the composite fertility index in Algeria from 1964 to 2020.



Source : Kouidri Mohamed, transition démographique et développement en Algérie, 2007.

Annuaire statistique de l'Algérie, résultat (1993-1994) Edition 1996, Annuaire statistique de l'Algérie, résultat (1997-1999) Edition 2001, Annuaire statistique de l'Algérie résultat (1999-2001) Edition 2003, Annuaire statistique de l'Algérie résultat (2004-2006) Edition 2008

Annuaire statistique résultat (2005-2007) Edition 2009, Démographie algérienne 2019, n°890, Démographie algérienne 2020, n°949, mics2019.

The Synthetic Fertility Index increased during the period (1964-1970) where it was estimated at 7.1 children per woman in 1964 and 8.50 children per woman in 1970 increased by about 20 % as a result of high fertility and the high proportion of unmarried women in reproductive age (Gourari Négadi, Jack Vallin, 1974,p.499) and the Algerian society was characterized by a natural fertility pattern which means the complete absence of the use of contraceptives after the emergence from the French colonial crisis and the availability of security and psychological stability, which led to the birth of many children in an attempt to compensate for the human losses during the revolution on the one part. On the other part, Algerian society was characterized by early marriage, low educational level for both sexes and incomplete education, especially for girls, which leads to a lack of awareness of the risk of having many children on women's health. Until 1985, this indicator declined continually, reaching 6.24 children per woman. This decline is primarily due to economic and social changes which are the main factor in changing the level of fertility through improved living and health conditions, improved educational levels for both sexes, increased the proportion of education, an increase in the average age of marriage, as well as the widespread use of contraceptives and the entry of women into the labor market. After that, the indicator continued to decline until 2006, with an average of 2.27 children per woman which decreased by about 64%. But, since 2007, we observe an increase in The Synthetic Fertility Index which exceeded 3 children in the recent period. This increase is due to the increase in the number of births, the increase in the number of marriages, the improvement in the standard of living of the population, the increase in the number of women in the age of reproduction and frequent procreation due to the delay in the age of marriage, as the increase in the marriage age leads from another view to retaining children before the end of the reproductive period.

2.3 Evolution of age-specific fertility:

The general fertility by age groups of women in reproductive age shows the difference in fertility between ages because this rate is not affected by age structure, unlike the general fertility, which is calculated for all women in reproductive age. Fertility rates by age groups are calculated by dividing the number of births to women of a certain age group by the number of women belonging to the same age group.

The distribution of fertility by age groups in different periods reflects the change in reproductive behavior, generally moving from a high to a low level for all ages. The fertility rate is characterized by a decline in the 15-19 age group in all years and then rises to reach the highest rate in the second and early third decades, the period of high biological fertility due to the marriage of the majority of the population in this age group, then fertility starts to decline in the last age groups, the period of low fertility. Where the general fertility rate for the 15-19 age group moved from 114.1‰ in 1970 to 9.3‰ in 2008 and 10‰ in 2012-2013, This age group was characterized by high fertility due to the incentive for early marriage imposed by customs and traditions in the absence of the use of contraceptives at the time. The fertility rate for the last age group, 45-49 years, declined from 42.2‰ to 5‰ during the period 1970-2019, This decline in fertility compared to other age groups is due to biological reasons. We also note the transition of the fertility and reproduction climax from the 25-29 age group in 1970 and 1977 to the 30-34 age group in 1986, 1998, 2008 and 2012, while in 2019 the fertility climax was specific to the 25-29 age group.

Fertility in the recent time period was characterized by an increase in general fertility rates between 2012 and 2019 for all ages, especially the middle ones, which can be attributed to the late age of marriage which leads to the diligence to have children in the remaining years of their reproductive life.

Table 01: Evolution of the age-specific fertility rate in Algeria ‰

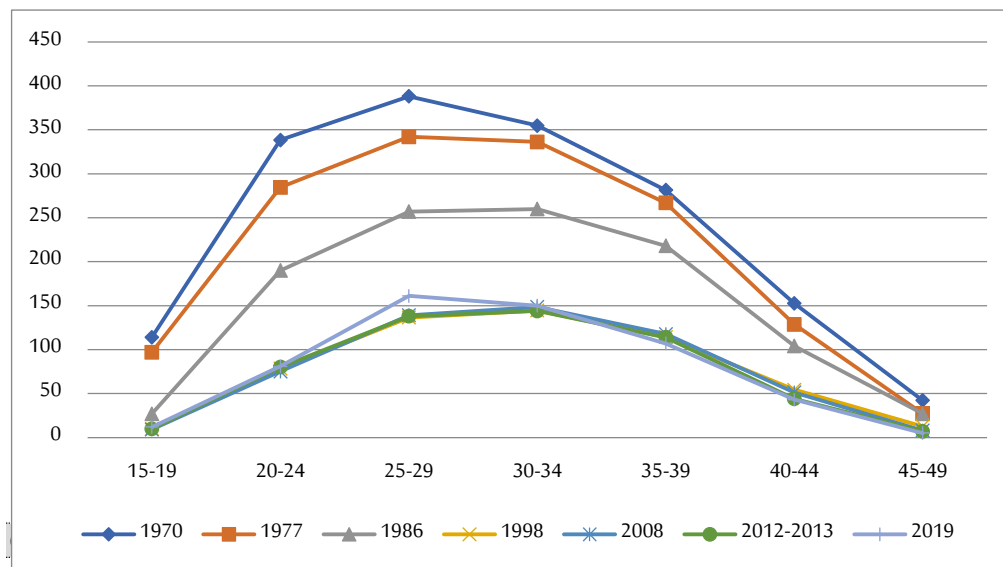
Age groups	1970	1977	1986	1998	2008	2012-2013	2019
15-19	114,1	97	27	9,9	9,3	10	12
20-24	338,5	284,6	190	78,2	75,1	80	81
25-29	388,1	342,1	257	136,4	139	138	161
30-34	354,8	336,3	260	144,5	148,5	144	150
35-39	281,5	266,8	218	114,3	117,7	114	107
40-44	152,5	128,7	104	54,4	51,2	44	43
45-49	42,2	27,3	27	12,6	8	7	5

Source : Annuaire Statistique de l'Algérie n° 30, EDITION 2014, Résultats 2010 / 2012, p55.

Rapport final, Enquête par grappes à indicateurs multiples (MICS4).

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6).

Figure 03: Evolution of the age-specific fertility rate in Algeria ‰



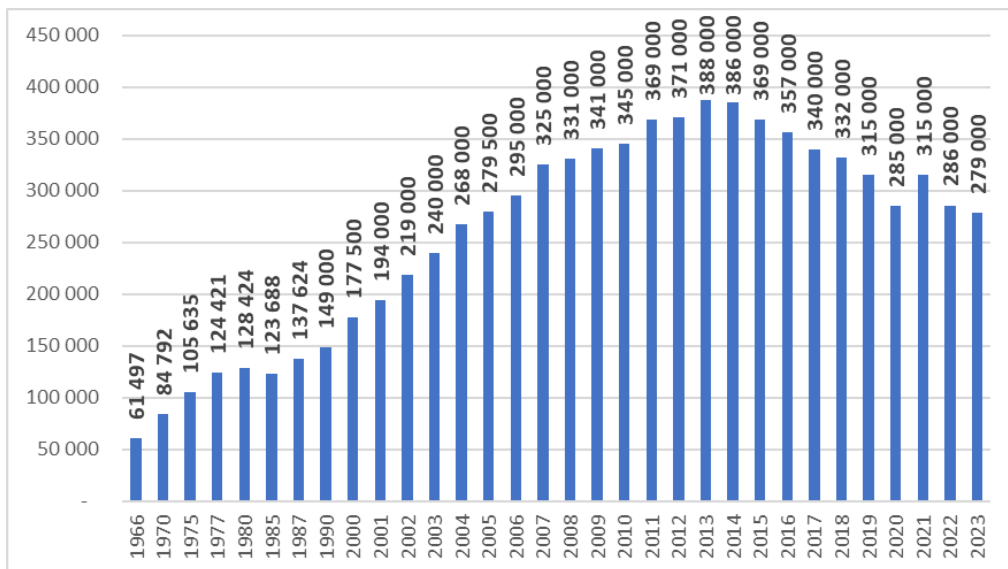
Source: Table N 1.

3. Marriage trends in Algeria:

3.1 Evolution of the number of marriages in Algeria:

The number of registered marriages in Algeria has continuously increased, doubling from 61497 to 124421 during the period 1966-1977, then doubling again in 2004 to 268000, and continuing to rise until 2013, when the number of marriages reached 388000 as a result of high population growth and an increase in the number of people of marriageable age on the one part, and improved socio-economic conditions on the other part. The last phase, from 2015 to 2023, witnessed a decrease in the number of registered marriages to 279,000. This decrease in the number of marriages is due to the changing demographics in general, as well as the Corona pandemic in recent times.

Figure 4: Evolution of the number of registered marriages in Algeria, 1966-2023.



Source: rétrospective statistique 1962-2020.

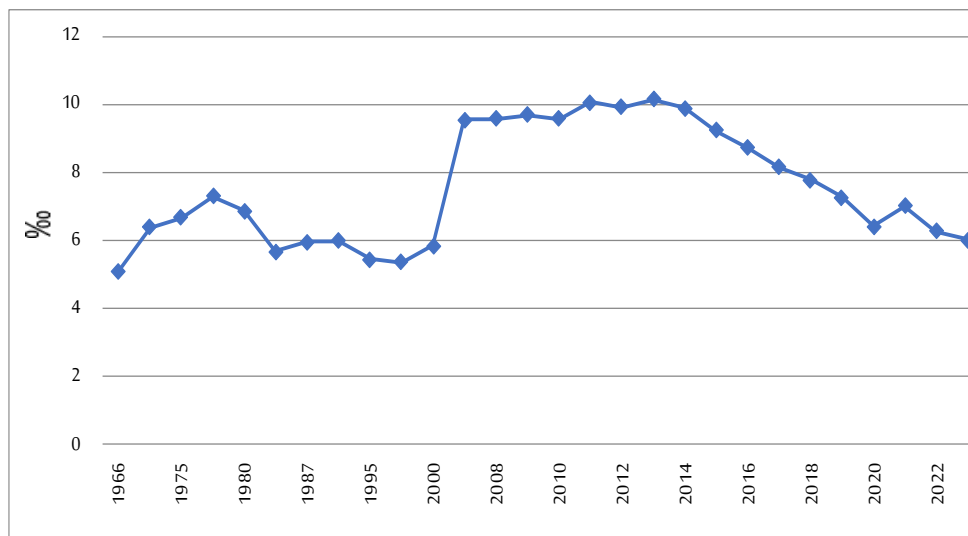
Démographie Algérienne 2018, n°: 853, p7

Démographie Algérienne 2020-2023, n°: 1030, p8.

3.2 Evolution of the crude marriage rate in Algeria 1966-2023:

The statistics about marriage rate in Algeria indicate that this rate has known high and low points. Based on the graphical representation of these evolutions, the crude marriage rate increased from 5.11‰ to 7.29‰ during the period 1966-1977, as a consequence of the improved socio-economic situation and stability in Algeria after independence, and then decreased to about 5‰ in the nineties due to the economic crisis that the country experienced at the end of the eighties and the tense security situation at that time. But at the beginning of the millennium, the rate increased by 73 % to reach 10.13‰ in 2013 as a result of improved economic and social conditions that permitted members of Algerian society to marry. The rate declined by 41 % to arrive at 6.01‰ during the last period 2013-2023.

Figure 5: Evolution of the crude marriage rate in Algeria 1966-2023.



Source : Delanda Aissa, Evolution de la nuptialité, actes du seminaire national sur la situation démographique en Algérie, université d'Oran, 21 et 22 mai 2012, édition du laboratoire de recherche en stratégies de population et développement durable, p14.

Démographie Algérienne 2020, n° : 949, p7.

Démographie Algérienne 2020-2023, n° : 1030, p8.

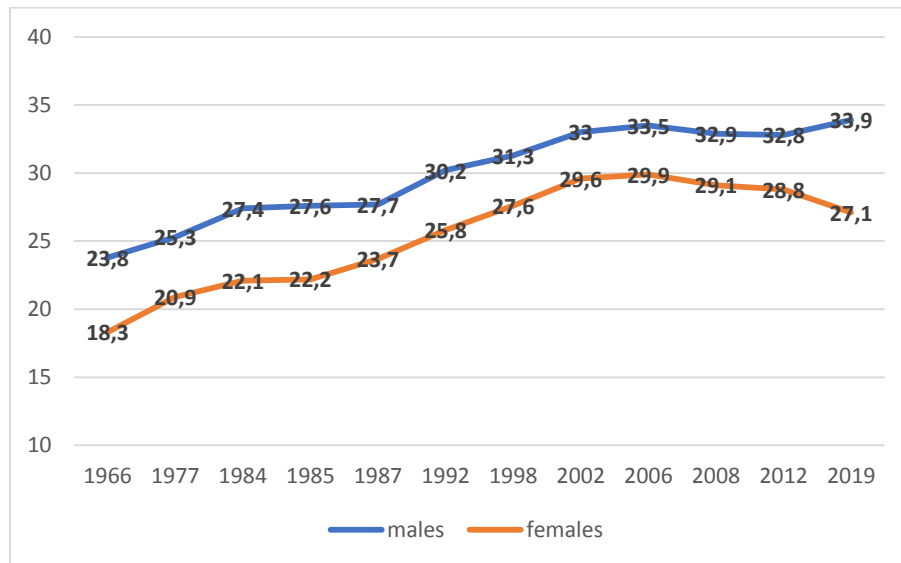
3.3 Age of First Marriage :

The age of first marriage is one of the direct factors that affect the level of fertility and has a large part in the explication of changes that affect this phenomenon, so that the delay in the age of marriage, especially for women, leads to a decline in fertility rates. The delay in marriage for women exposes them to low fertility, reduces the duration of marriage and the reproduction period and therefore affects the actual reproduction. The delay in the age of first marriage is more important in explaining fertility for the Arab region than other family planning methods (Sheikh Nasira, 2018, p. 150).

The average age of first marriage in Algeria has increased by 63 %, from 18.3 years to 29.9 years for females, a difference of 12 years. Marriage in Algeria after independence was characterized by marriage at an early age, with half of all women married before 20 years old and 10 per cent of single women in the 20-24 age group (Hemal Ali and Haffad Tahar, 1999, p. 68), As for males, it increased by 41 % from 23.8 years to 33.5 years, a difference of 10 years in the period 1966-2006. This delay in the age of marriage is due to the preference of women to study on the one part, and work before getting married on the other part, as well as other factors such as the unemployment and housing crisis, which leads to the reluctance of young males to marry. While the average age of first marriage has recently declined to 29.1 years for females and 32.9 years for males in 2008, 28.8 years for females and 32.8 years for males in 2012, 27.1 years for females and 33.9 years for males in 2019, which could explain the rise in fertility in recent years. The impact of the delay in the age of first marriage on fertility is clearly reflected in the average age

of childbearing which the average age of childbearing increased from 29.5 years in 1990 to 32 years in 2000 and has fluctuated around 31 years in recent years.

Figure 6: Evolution of the age of first marriage in Algeria, 1966-2019.



Source : rétrospective statistique 1962-2011.

Rapport final, Enquête par grappes à indicateurs multiples (MICS4).

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6).

This delay in the age of marriage has contributed to the rise in celibacy proportions, which is generally considered one of the components of the marriage market and has a significant impact on population fertility. The celibacy proportion generally increased by 20 % for males and 49 % for females during the period 1977-2019, from 37.1 % to 44.6 % for males and from 21.8 % to 32.4 % for females (Rachedi Khadra, 2021, p.101), and it is observed from the table No 04 that the distribution of male celibacy proportions by age groups between 1966 and 2019 has increased in all age groups, especially in the middle age groups from 20 years to 35 years, headed by the 25-29 age group, which increased 4 times from 19.5 % to 84.5 %, and the 30-34 age group which increased 6 times from 8.4 % to 53.4 %, as for females, the 20-24 age group registered the largest increase during this period with a difference of 62 points, which was estimated at 73.3 % in 2019 compared to 11.2 % in 1966, an increase of about 7 times, followed by the 15-19 age group with a difference of 42 points, which was estimated at 95.8 % in 2019, compared to 53.5 % in 1966, an increase of about 2 times. This rise in celibacy proportions affected all the remaining age groups, which increased to 42.3 % for the 25-29 age group, 26.7 % for the 30-34 age group and 23.3 % for the 35-39 age group, after being estimated at 4 %, 2.2 % and 1.6 %, respectively in 1966.

Table 2: Celibacy proportion by age groups, for 1966 and 2019.

Age groups	1966		2019	
	males	females	males	females
15-19	95	53,6	99,9	95,8
20-24	54,4	11,2	98,3	73,3
25-29	19,5	4	84,5	42,3
30-34	8,4	2,2	53,4	26,7
35-39	5	1,6	28,6	23,3
40-44	3,4	1,3	15,5	19,7

45-49	2,6	1,2	8	13,8
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Source: 2018-2017، أطروحة دكتوراه في الديمغرافيا، طوليل شهرزاد، دراسة سوسيو-ديمغرافية لواقع الزواج الأول بالجزائر.

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6)

The statistics on definitive celibacy in Algeria during the period 1987-2019, which represents the percentage of people who reached the age of 50 years and were unable to marry, were characterized by a higher rate for males compared to females during the years 1987 and 1992, but since 1998, definitive celibacy becomes higher for females. so that the proportion gradually developed from 1.1 % to 4.1 % during the period 1998-2008, reaching the highest percentage in 2019, estimated at 12.4 per cent for females and 5.1 per cent for males, which confirms the change in the marriage market in Algeria.

Table 3: Evolution of the final celibacy index in Algeria between 1987 and 2019.

years	males	females
1987	2,4	1,1
1992	2,2	1,9
1998	2,3	3,1
2002	2,3	3,8
2006	2,7	3,4
2008	2,3	4,1
2019	5,3	12,4

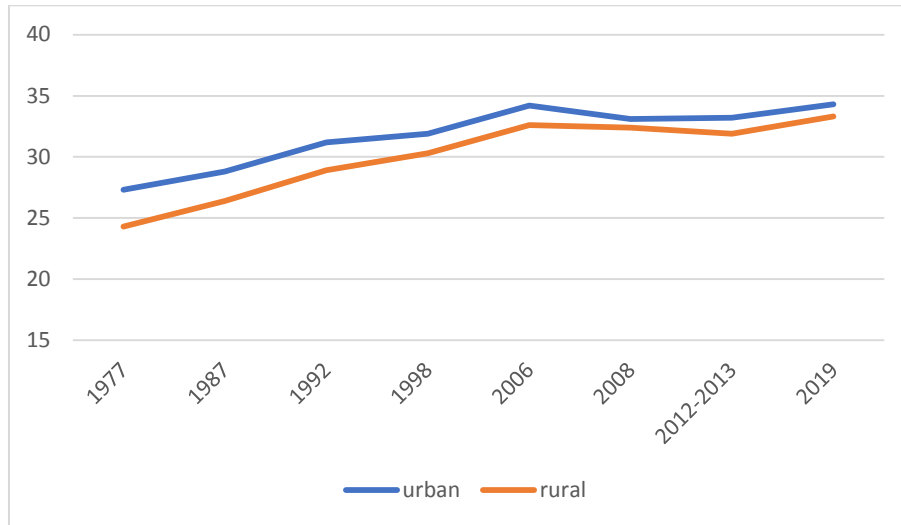
Source: 2018-2017، أطروحة دكتوراه في الديمغرافيا، طوليل شهرزاد، دراسة سوسيو-ديمغرافية لواقع الزواج الأول بالجزائر، ص 117.

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6).

3.4. Age of first marriage by sex and place of residence:

The data about the average age of first marriage by sex and place of residence presented in Figures No. 4 and 5 demonstrate that this indicator is higher in the urban area for both sexes during the period 1977-2019. The difference in the average age of first marriage between rural and urban areas decreased from 3 years to 1 year for males, while for females this difference clearly decreased from 3.3 years to 0.3 years during the same period, which confirms that the role of place of residence in the determination of the age of first marriage is not as effective as it was in the early years after independence.

Figure 7: Evolution of the average age of first marriage for males by place of residence.

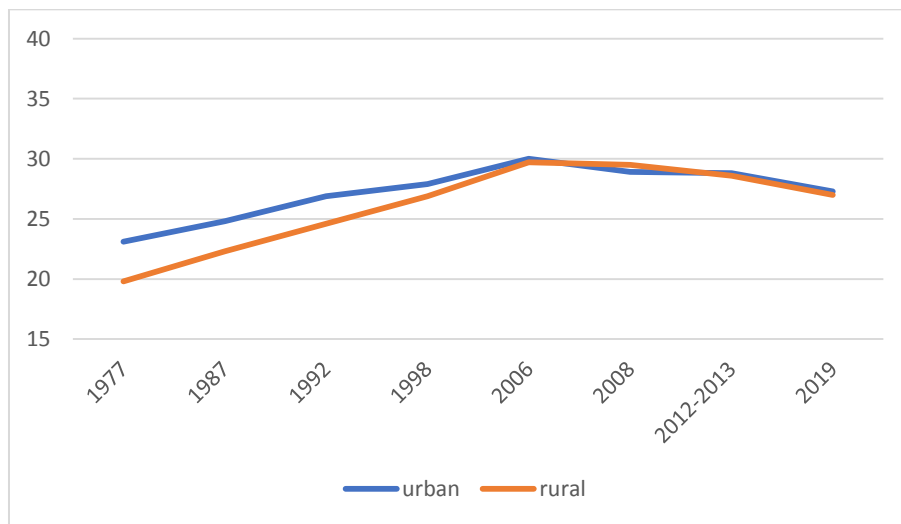


Source: rétrospective statistique 1962-2020.

طويل شهرزاد، دراسة سوسيو- ديمغرافية لواقع الزواج الأول بالجزائر، أطروحة الدكتوراه في الديمغرافيا، 2017-2018، ص 191.

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6).

Figure 8: Evolution of the average age of first marriage for females by place of residence



Source: rétrospective statistique 1962-2020.

طويل شهرزاد، دراسة سوسيو- ديمغرافية لواقع الزواج الأول بالجزائر، أطروحة الدكتوراه في الديمغرافيا، 2017-2018، ص 191.

Rapport final des résultats, Enquête par grappes à indicateurs multiples (MICS6).

3.5 Age of first marriage by sex and educational level:

Most studies indicate that there is a relation between educational level and the age of first marriage, so that the more educational level increases, the more the age of first marriage is delayed, and this is confirmed by the data of various surveys.

The average age of first marriage for males increased at all educational levels during the period 1992-2019, with a difference of around 4 years for illiterate people, 1.6 years for the primary level, 2.5 years for the intermediate

level, and 2.3 years for the secondary and university levels. As for females, the average age of first marriage also increased at all educational levels during the period 1992-2006 with a difference of 5.1 years for uneducated women, 4 years for women with a primary level, 2.1 years for an intermediate level, and 2.9 years for women with a secondary and university level. While this indicator declined significantly during the period (2006-2019) with a reduction by about 2 years for uneducated women, 6 years for women with a primary level, 5.5 years for women with an intermediate level, and about 5 years for women with a secondary and university level of education.

Table 4: Evolution of the average age of first marriage by sex and educational level by different surveys.

	1992		2002		2006		2012-2013		2019	
educational level	male s	female s	male s	female s	male s	female s	male s	female s	male s	female s
illiterate	27,4	23,6	31	28,3	30,4	28,7	30,6	30,5	30,98	26,85
Primary	31	25,6	33,4	29,3	32,9	29,6	32,4	26,9	32,64	23,48
intermediate	30,9	26,9	33,2	30,7	33,9	29	32,8	26,3	33,39	23,5
secondary+university	31,6	30,3	35,5	33,2	34,3	33,2	33,4	29,95	33,88	28,42

Source : Rapport principal, Enquête Algérienne sur la santé de la famille (EASF)2002.

Rapport principal, Enquête Algérienne sur la santé de la mère et de l'enfant (EASME)1992.

Rapport principal, Enquête nationale à indicateur multiples (MICS3).

Rapport final, Enquête par grappes à indicateurs multiples (MICS4).

2019: Calculated using the Multiple Indicator Cluster Survey database(MICS6).

4. Age of first marriage and fertility :

The relation between fertility and age at first marriage is related to the number of children a woman can have during her reproductive life, and it is logical that a woman who marries early will have a large number of children, and a woman who marries late will have fewer children.

Table 5: Average number of live births by age at first marriage in Algeria by different surveys.

	Age groups						
surveys	10-14	15-17	18-19	20-21	22-24	25-29	30-49
1992	8,4	8,1	7,4	6,9	5,2	4,4	2,3
2002	7,6	7,4	6,8	5,9	5,4	3,8	1,8
2013-2012	5,09	4,46	3,45	2,88	2,45	2,03	1,43
2019	4,69	3,68	3,16	2,91	2,57	2,23	1,53

Source : Rapport principal, Enquête Algérienne sur la santé de la famille (EASF)2002.

2012-2013, 2019 Calculated using the Multiple Indicator Cluster Survey database 4MICS and 6MICS.

The statistics indicate that as the age at first marriage increases, the average number of children born decreases due to the reduction in the reproduction period as a result of women's delay in marriage. This marriage delay is primarily due to education, meaning that women prefer to study and marry after completing their education, which has contributed greatly to raising women's awareness about the need to participate in family planning decisions, protect their reproductive health, and enter into the labor sector, unlike women who marry early, are not sufficiently educated, and do not enter into the labor sector. The data in the table confirms this relation by registering in 1992, for example, the average number of children estimated at 8.4 children per woman for women who married in the age of 10-14 years and the average number of children 2.3 for women who married in the age

of 30-49 years. The same observation was made for all surveys, as the average number of children decreased in all age groups, and the average number of children in 2019 was estimated at 4.69 children per woman for women who married in the age of 10-14 years and 1.53 children for women who married in the age of 30-49 years.

5. Duration of marriage and fertility:

The duration of marriage is another determinant of the level of fertility. The long duration of marriage, especially in the absence of contraception, is a major factor in high fertility rates (DELEND Aissa, 2014, p.23). The following table indicates that the average number of children during the period 1992-2019 increases as the duration of marriage increases. The average number of children in 1992 was 1 child per woman during the first five years of marriage, increasing to 8.5 children per woman for couples married for 30 years or more, and the average number of children in 2019 was 0.7 children per woman during the first five years of marriage, increasing to 5 children per woman for couples married for 30 years or more. So, the average number of children increases as the duration of marriage increases.

Table 6: Average number of live births by duration of marriage by different surveys.

	Duration of marriage						
surveys	0_4	5_9	10_14	15-19	20-24	25-29	30 and +
1992	1	2,6	4,2	5,7	6,8	7,9	8,5
2002	0,7	2,1	3,2	4,4	5,5	6,6	7,5
2013-2012	0,72	1,97	2,85	3,61	4,28	5,07	5,91
2019	0,7	1,82	2,78	3,41	3,98	4,44	5

Source : Rapport principal, Enquête Algérienne sur la santé de la famille (EASF)2002.

2012-2013, 2019 Calculated using the Multiple Indicator Cluster Survey database 4MICS and 6MICS.

6. Age of first marriage and contraceptive use:

The age of first marriage and duration of marriage are considered the primary determinants of fertility variation, but there is another factor that cannot be ignored which is the use of contraception during marriage.

The results of the Multiple Indicator Cluster Survey for 2012, 2013 and 2019 indicate that contraceptive use by age of first marriage is high in age groups below 30 years, exceeding 50 %, which women married between the ages of 20-24 years having the highest rate of 54.7 % and 63.5 %, and the rate decreases after the age of 30 years, which confirms that the more advanced the age of first marriage, the more low the rates of contraceptive use, as women who marry at a later age try to recuperate the missed years of the reproductive period and have as many children as possible.

Table 7: Contraceptive use proportions by age of first marriage (2012-2013, 2019)

Age of First Marriage	2012-2013	2019
15-19	54,6	61,9
20-24	54,7	63,5
25-29	52,6	59,9
30-34	40	47,4
35-39	50	31,4
40-44	0	7,1

45-49	-	2,9
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Source: Calculated using the Multiple Indicator Cluster Survey database 4MICS and 6MICS.

7. Conclusion :

The phenomenon of fertility in Algeria has witnessed a qualitative transition influenced by changes in the phenomenon of marriage, which has witnessed an important transformation as a result of social, economic and cultural changes. The analytical study of statistical data taken from various statistical sources shows the extent of the change in fertility and marriage levels in Algeria. The relation between fertility and age of marriage is characterised by an inverse relation where the more the age of marriage increases, the more the average number of children born decreases and the relation between fertility and the duration of marriage is characterised by a direct relation where the more the duration of marriage is longer, the more the average number of children born per woman increases, and the more the age of first marriage increases, the more the use of contraception is low, since women who marry at a later age endeavour to have as many children as. The high rate of female celibacy in Algeria, which is the result of education and the preference for further study over marriage, has a major impact on celibacy and thus on delaying the age of first marriage and reducing the rate of marriage at younger ages, thereby affecting fertility.

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