

THE SOCIO-ECONOMIC IMPLICATIONS OF FAMILY SIZE IN KIREHE DISTRICT, RWANDA**Mugiraneza Donat, *Dr. Agaba Moses and Dr. Abanis Turyahebwa**

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Abstract

Background: Women fertility inhibition research designed to downsize the family in most countries of the world appears to be slow or ineffective in a significant decrease in population growth. Therefore, research attention continues to rise in search of a lasting solution to this dilemma. **Objectives:** This study was designed to analyze the family size and its socio-economic implications in the Kirehe district of Rwanda with focus on female employment, spousal income, and education. **Material and Methods:** The study adopted a cross sectional and descriptive design with a quantitative bias, 398 respondents were selected using a purposive and simple random sampling from a population size of 57600 families living in the Kirehe district of Rwanda. The data collection instruments were; questionnaire and documentary Analysis while primary and secondary sources of data were used. Data analysis for descriptive statistical relevance with appropriate tools were done using SPSS. **Results and conclusion:** From the result of this study, there was no association between family size and health of the family, educational background of respondents, education attainment of children, spousal income, and female employment. **Recommendations:** Behavior modification and attitude change towards gender preference, increase in women literacy for women empowerment, personalized counseling, guidance and follow up regarding birth control measures, are highly recommended.

Keywords: Family size, Socio-economic, Kirehe, Rwanda.

INTRODUCTION

Family size is fast becoming a global socioeconomic issue that is generating some research interest because there may already be a considerable strong negative correlation between family size and family income on a global scale but with emphasis on developing country settings (1). The size of the family is a matter of great importance not only for the country as a whole but also for the welfare and health of the individual, the family, and the community. Undeveloped countries, large family sizes, and the resultant high birth rates accompanied by rapid population growth during the industrial revolution are mainly because of improved public health status and available socioeconomic amenities. As countries became more prosperous, both death and birth rates decreased, resulting in low population growth rates adversely affecting the morbidity and mortality rate. Today, most of the developing world is characterized by high birth rates for much the same reasons as in the industrialized countries in the past. Rwanda is the most densely populated country in Africa and one of the most densely populated in the world. The current population is estimated at 10.7 million people with 365 people per square kilometer compared with an average of 32 per kilometer in sub-Saharan Africa. Rwanda faces a rapidly growing population, high population density, high fertility rates, and a high dependence ratio. At current fertility levels, a Rwandan woman will give birth to an average of 5.8 children during her reproductive years (Ministry of Health, 2007-2008). That fertility rate, which is characterized by a very high level of births at young maternal ages, peaks at 25-29 years before declining gradually. Among women aged 25-49, the median age at first birth is estimated to be 22 years (Ministry of Health, 2007-2008).

Significant differences in fertility levels exist according to a place of residence: women from rural areas (5.9 children per woman) have more children than those from Kigali City (4.9 children per woman). Similarly, the fertility of women with secondary education or higher (4.9 children per woman) is notably lower than that of women with primary education (5.9 children per woman) and that of women with no education (6.1 children per woman). This size of the family hurts government initiatives to stimulate economic growth and reduce poverty, increase employment, achieve sustainable self-sufficiency in food as well as and exerting pressure on land and environment, infrastructures such as energy, water and sanitation, and health and educational facilities. The population of Kirehe district suffers much from malaria as well as the epidemiological diseases prevailing in the area: malaria, bloody diarrhea, infections of the lower respiratory tracts, intestinal parasites, infections of the higher respiratory tracts, traumatism, gynecological infections, coetaneous infections. The distance traveled by the population to reach the medical centers (MC) remains also very long for a patient because it is on average of 7 km. The rate of malnutrition of the children and contamination of HIV/AIDS is respectively 1% and 10%. Malaria is also one of the main causes of deaths in the district with its rate of infection of 90% (Arthur JL, 2007). The 10% rate of pre-birth consultation and childbirth in health centers remains also relatively low (Ministry of Health, 2007-2008). To fight against morbidity and mortality in Kirehe District, adhesion to the mutual insurance companies of health was initiated and today 58% of the population are affiliated. Family size is a reflection of personal considerations which is influenced by many factors like socio-cultural practices, educational and economic status, religious beliefs, customs and values Institute of Medicine –US (2002). Replete literature, Bearden (2012) have shown that the large family size comes with its attendant implications of poor health, inability to provide adequately for the education of the siblings, low standard of living, and the inability to fulfill one's dreams but

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the implications of small family size are the ability for one to enjoy the necessities of life with the choice to afford and enjoy certain luxuries of life.

Objectives of the study

Objectives of the paper are:

(i) To determine the relationship between family size and female employment; (ii) To explore the relationship between spousal income and family size, (iii) To examine the relationship between family size and various aspects of education attained; (iv) To establish the relationship between family size and health of the family

MATERIALS AND METHODS

This is a descriptive cross-sectional survey in which both the quantitative and qualitative data were retrieved from three hundred and ninety-eight (398) recruited consenting participants from among a general population of fifty-seven thousand six hundred (57,600) residents of the Kirehe district of Rwanda. Family size, demographic and socioeconomic characteristics, recruited consenting participants were retrieved, processed, and analyzed. Respondents were categorized and subjected to statistical analysis using statistical tools such as the chi-square test, Univariate and bivariate analysis of data generated. With the help of the statistical package for the social sciences (SPSS) version 16, The chi-square test, was used to test for the relationship between observed and expected data while the univariate analysis was done to concisely summarize the data generated to determine a pattern or a trend that may help discuss the outcome of the investigation. Data were also subjected to multivariate analysis to identify a relationship that may exist between variables and to quantify these observed relations between variables with the ultimate goal of getting a more realistic picture of variables compared to univariate analysis

RESULT PRESENTATION

Characteristic of respondents

Table 1. The characteristics from the respondents on age and sex

Age	Sex		Total	%
	M	F		
<27	-	-	-	-
18-27	-	7	7	1.8
28-37	20	90	110	28.2
38-47	52	89	141	36.2
48-57	71	37	108	27.6
Over 57	17	7	24	6.2
TOTAL	160	230	390	

This report shows that 1.8 % of the respondents are between 18-27 years old, 28.2% are between 28- 37 years old, 36.2% are between 38-47 years old, 27.6% are between 48-57 years old and 6.2% are over 57. The Table 1 also shows that 160 are male and 230 are female. Occupational characteristics of the respondents' There were 17(4.4%) civil servants, 129 (33.1%) farmers, 86 (22.1%) Businessmen, 31 (7.9%) public servants, 70 (17.9%) health personnel, 4 (1.1%), industrial workers, 22 (5.6%) drivers, and 31 (7.9%) businesswomen, that participated in this study Information provided through these occupational characteristics revealed that 4.4% are Civil

servants, 33.1 are farmers, 22.1% are Businessmen, 7.89 are Public servants, 17.9 % are Health personnel, 1.1% are Industrial work and 5.6 are drivers and 7.9 are a businesswoman. Table 2 below shows that the respondents with a family size of 7-9 and over 9 have the family visiting the hospital for treatment weekly. On monthly basis, it was identified that 133 respondents have their families visiting the hospital. Quarterly as well 30.7% of respondents with 1-3 children, 27% respondents with 4-6 children, 41.6 respondents with 7-9 children, and 0.7 respondents with Over 9 children visit the hospital. Yearly as well 42.1% of respondents with 1-3 children, 22.7% of respondents with 4-6 children, and 35.2 respondents with 7-9 children.

Table 3 below shows that out of 95 respondents who had a family size of 1-3, 25.3% of them had their children with primary school level, 54.7% with post-primary, and 20% with university level of education. 124 respondents who had a family size of 4-6, 21% of them had their children without formal education, 63.7 with primary level, 9.7% with Secondary/Technical, and 5.6 % with university level. 160 respondents who had a family size of 7-9, 25.6% of them had their children without formal education, 53.1 with primary level, 15% with Secondary/Technical, and 6.3 % with university level. One hundred and twenty-four (124) respondents who had a family size of over 9, 36.4% of them had their children without formal education, 45.5% with primary level, and 18.1% with post-primary level. It was identified that relatively families of smaller sizes; that is, 1-3 had most of their children at Secondary/Technical and university levels. The study itself as shown in Table No.5 shows that comparatively, respondents with smaller families can educate their children to very higher levels of academic excellence. The data identified that large family size does not significantly impact the educational attainment of children: the critical value ($\alpha=0.05$, $df=389$) is 394.626. Since the computed value (295.947) is less than the critical value (394.626), we declare the χ^2 not significant

Out of 149 respondents who wish to educate their children to the secondary/technical level, 73.8% stated their capability of achieving their objective. 150 respondents who wish to educate their children to the University, 82% stated their capability of achieving their objective. 18.7% of respondents expressed their inability to achieve any educational level. Reasons for their inabilities included financial constraints, low intelligence of their children, and the absence of any better employment. Those who answered in the positive indicated their preparedness in terms of a prior or purported savings towards that as well as being better employed, spousal financial contributions, and their small family size that comes with a lesser burden in terms of expenditure as the reasons for their capability of achieving same. This shows that in the presence of adequate resources and a lesser number of children in the family, The data identified that large family size does not significantly impact the expected educational levels of children: the critical value ($\alpha=0.05$, $df=389$) is 394.626. Since the computed value (328.816) is less than the critical value (394.626), we declare the χ^2 not significant. The data identified that large family size does not significantly impact the educational background of respondents: the critical value ($\alpha=0.05$, $df=389$) is 394.626. Since the computed value (295.407) is less than the critical value (394.626), we declare the χ^2 not significant.

Table 3. Family respondents on hospital attendance

Family size	Family's Frequency of attending Hospital										TOTAL	%
	Weekly		Monthly		Quarterly		Yearly		Others			
	Number	%	Number	%	Number	%	Number	%	Number	%		
1-3	-	-	11	8.3	42	30.7	37	42.1	5	26.3	95	24.4
4-6	-	-	59	44.4	37	27	20	22.7	8	42.1	124	31.8
7-9	6	46.2	60	45.1	57	41.6	31	35.2	6	31.6	160	41
Over 9	7	53.8	3	2.2	1	0.7	-	-	-	-	11	2.8
Total	13	100	133	100	137	100	88	100	19	100	390	100

Table 4. Family respondents education level

Family size	No Formal Education		Primary		Post-primary		University		Total	%
	Number	%	Number	%	Number	%	Number	%		
<3	-	-	-	-	-	-	-	-	-	-
1-3	-	-	24	25.3	52	54.7	19	20	95	100
4-6	26	21	79	63.7	12	9.7	7	5.6	124	100
7-9	41	25.6	85	53.1	24	15	10	6.3	160	100
Over 9	4	36.4	5	45.5	2	18.1	-	-	11	100
Total	71	18.2	193	49.3	90	23.2	36	9.3	390	100

Table 5. Expected Level to Educate Children against Capability of Educating Children

Expected Level To Educate Children	The capability of Educating Children to the Expected level					
	Yes		No		Total	
	Number	%	Number	%	Number	%
No Formal Education	12	100	-	-	12	100
Primary	72	91.1	7	8.9	79	100
Secondary/Technical	110	73.8	39	26.2	149	100
University	123	82	27	18	150	100
Total	317	81.3	73	18.7	390	100

DISCUSSION

Many studies from developed countries show a negative correlation between family size and children's academic performance while results from developing countries show this association ranging from positive to neutral to negative, depending on the context (1,5, 6). The body of evidence suggests that this relationship changes as a society develops, but this theory has been difficult to assess because the existing evidence requires comparisons across countries with different social structures and at different levels of development (7,8). The world's fourth most populous nation in 2007, Indonesia has developed rapidly in recent decades. This context provides the opportunity to study these relationships within the same rapidly developing setting to see if and how these associations change. Results show that in urban areas, the association between family size and children's schooling was positive for older cohorts but negative for more recent cohorts (9-12). Models using instrumental variables to address the potential endogeneity of fertility confirm these results. In contrast, rural areas show no significant association between family size and children's schooling for any cohort (13). These findings show how the relationship between family size and children's schooling can differ within the same country and change over time as contextual factors evolve with socioeconomic development (14-16). The result from the result of this study shows that there was no association between family size and educational background of respondents in the Kirehe district (1, 17). The data identified that large family size does not significantly impact the educational background of respondents: the critical value ($\alpha=0.05$, $df=389$) is 394.626. Since the computed value (295.407) is less than the critical value (394.626), we declare the χ^2 not significant. Education background defines the capacity of children to learn and to understand when they are taught any subject including their ability to give good feedback when examined.

Good cognitive development between childhood and adulthood is related to the future mental and physical status well as the occupational and financial success of a child. Therefore, outlining the genetic influences behind observable changes in cognitive abilities during this developmental period will give us important insights into the biological mechanisms that govern both typical and atypical maturation in children (18-20). So this has little or nothing to do with family size. It has been well established that schooling is negatively correlated with sibship size. That is, children with fewer brothers and sisters obtain more schooling than those with more siblings. This negative association exists for many different measures of children's human capital, including completed schooling, standardized test scores, and grades, and holds even after family socioeconomic characteristics are controlled (21). In the sociological literature, this finding is often explained using an argument of finite resources: parents have limited time, money, and patience to devote to the education of their children, and those with fewer children can invest more per child. This theory of resource dilution fits well with the classic notion of the quality-quantity trade-off in family economics (22). In recent years, some research has called into question this seemingly robust negative relationship between family size and children's schooling. Some scholars have argued that this finding might be biased or spurious. If this negative association is explained by factors such as unobserved family characteristics that are not controlled in the study, then our understanding of the true relationship between these variables maybe erroneous (23). Meanwhile few studies have addressed the concern that fertility and children's schooling are jointly determined, despite evidence suggesting this is the case in some settings or sociohistorical periods (24). The evidence from Botswana and Kenya, on the other hand, suggests the reverse is true: educational attainment has a positive relationship with family size (15). Even within the same country, studies show that patterns differ by subgroup. Among

Israeli Jews, for example, family size has a negative association with educational attainment. Among Israeli Muslims, who are less advantaged socioeconomically, live in less urban settings, have extended kinship networks, and have much higher fertility rates, family size and educational attainment are not associated (25). The result, of this study, showed that out of the 95 respondents who had 1-3 children, 96.8% were influenced by their incomes with 3.2% indicating a little or no influence at all. The 85.5% of respondents with children of 4-6 were particular of their incomes in the selection of their family sizes whilst 14.5% indicated the negative. The 76.2% of respondents with 7-9 children in their families were largely influenced by their incomes with 23.8% of respondents having a lesser or no influence of their incomes on the choice of their family sizes. The 72.7% of respondents with a family size of above 9 were particular of their incomes in the selection of their family sizes whilst 27.3% indicated the negative.

The large family size of a low-income family impacts the education resources of the children and their ability to attain good schools with good human resources for education and good education training facilities. A large family size of high-income families will enable the family to leverage the economic status of the family to get the best education exposure and training and invariably leads to good education performance. Good exposure to education training facilities may also impact on the cognitive status of the children large or small family size with little not good exposure to quality education training. The result of this study (the critical value ($\alpha=0.05$, $df=389$) is 394.626. then X^2 is not significant (computed value (260.363) < critical value 394.626) identified that large family size does not significantly affect the salary/income status of the spouse but may influence the utilization of outcome of the income. This is because the magnitude of the income outcome (money) determines the level of wellbeing of children which has a relationship with the cognitive abilities of the child that invariably influence the academic performance of the child (26, 27)

This study showed that out of the 95 respondents who had 1-3 children, 82.1% were influenced by their woman's employment with 17.9% indicating a little or no influence at all. The 85.5% of respondents with children of 4-6 were particular of their woman's employment in the selection of their family sizes whilst 14.5% indicated the negative. The 76.5% of respondents with 7-9 children in their families were largely influenced by their woman's employment with 23.5% of respondents having a lesser or no influence of their woman's employment on the choice of their family sizes. 63.6% of respondents with a family size of above 9 were particular of their woman's employment in the selection of their family sizes whilst 36.4% indicated the negative. Throughout this study, female employment was not associated with family size. The data identified that large family size does not significantly impact female employment: the critical value ($\alpha=0.05$, $df=389$) is 394.626. Since the computed value (255.117) is less than the critical value (394.626), we declare the χ^2 not significant. This is in line with other reports that conclude that Maternal education has a definite and significant effect on the nutritional status of children. This is the key factor to be addressed for the prevention or improvement of childhood malnutrition. For this, it is imperative to launch sustainable programs at the national and regional levels to uplift women's educational status to combat this ever-increasing burden of malnutrition. (28, 29) Working-class in

the mid-19th century was studied leading to the conclusion that women working in textiles in such areas took control of themselves; hence limiting their family size as investigated in the Lancashire textile mills (30, 31). Women working in textile mills in Lancashire had smaller families than any other class except skilled professionals and businessmen. Time devoted to the labor market is potentially time spent away from child-rearing, thus resulting in a strain between mother and worker roles (32). Moreover, the decision to have children is costly in the sense that income is lost when women do not work outside the home to give birth (33, 34) Because of the conflicting nature of the female employment and fertility relationship, the relative rates of fertility among women may be different depending on whether a woman participates in the labor market or not (35). Thus, employment may significantly affect the rate at which women have children.

The existence of a negative relationship between fertility and female employment is well established (36). While on the aggregate level, historical trends indicate that fertility rates and labor-force participation rates for women are moving in opposite directions particularly for married women with at least one child, the nature of the relationship is still in question. Many of the controversies regarding the study of fertility and female employment are methodological and are centered on the issues of specification and causal direction (37-40); The lack of a consensus of how to model the relationship between fertility and female employment is indicated by a "substantial amount of confusion surrounding the causality issue". In particular, the issues of causality and specification may be broken down into four possibilities

1. Fertility affects labor-force participation;
2. labor-force participation affects fertility decisions;
3. Both fertility and labor-force participation affect each other; and,
4. The observed negative relationship is spurious and is caused by common exogenous factors affecting both variables.

A report on fertility and female employment in Sweden finds evidence to suggest that one's values and life-course strategy are among the strongest determinants of child-bearing behavior, particularly concerning the emergence of the two-child norm (41). They argue that the "increase in the number of women in paid employment may have been one of several important features of a process of development which strengthened the two-child ideal and made it become the dominant determinant of family size". Moreover, they find that the strongest impacts on the probability of a second birth occurring are a woman's employment status, educational level, and marital status. The research points to the fact that people with larger family sizes are those who frequently visit the hospital. With the probability of higher expenditure on health. Larger family size in effect is a fertile ground for disease prevalence hence expenditure on health (42, 43). Studies have also linked family size to social and environmental factors associated with poor nutrition status in children, such as poverty (especially with misdistribution of wealth and with inflation), family size, mother's literacy level, single-parent households, maternal deprivation, and many other factors including child neglect or abuse, food shortage, high incidence of infections, especially malaria (44). In certain instances, there may be sufficient food available but the quality may be undesirable and there is a close relationship between the size of

a family and the quality of health of the family as well as the family's expenditure on health (45). It has been reported that a working-class wage was insufficient to meet the needs of a couple with children and this is the bases for advocates of family allowances (46)

Limitations

There was limited local literature on the subject under study. To overcome this, the researchers utilized research reports, the Internet, and published government documents. The time frame in which the research was completed was not enough and some respondents did not easily disclose certain information which reduced the amount of data collected. However, this was minimized by explaining to the respondents the purpose of the study so that they avail enough information. The researchers were denied access to literature from public documents from the local administration and public agencies which delayed data analysis. However, this was minimized by convincing the relevant authorities so that those documents were provided.

Conclusion

- The research concluded that large family size does not significantly impact the expected educational levels of children
- The study concluded that large family size does not significantly impact the educational background of respondents
- The study concluded that large family size does not significantly impact the salary/income
- The study concluded that large family size does not significantly impact the female employment
- The study concluded that large family size does not significantly impact the health of the family:

Recommendations

The study recommends behavior modification and attitude towards gender preference. There is a great need to increase women's literacy for empowering women. Personalized counseling, guidance and follow up regarding birth control measures. The other side is to demand full payments for services provided in respect of the above from larger family sizes. People should also be allowed to freely abort unwanted pregnancies since the faith awaiting such a fetus if born is worst than allowing them to be aborted before birth. Educational concerts and theatres should also be promoted in schools and community centers to re-echo the need for smaller family sizes. These could even be in terms of cinema vans being used for such campaigns in certain deprived communities. It is also recommended that more educational campaigns are held by the Rwanda Health Service, Schools, and Churches on the potentials of either boys or girls in the family since most people keep giving birth until they obtain a substantial share of both sexes in the family. Motivating people economically independent should also be seen as a major dimension to encouraging smaller family sizes. When people are employed, they are in the position to offer better education to their children; hence making them aware of the implications of a large family. When spouses are also gainfully employed and contributing their quota to the family's income, it puts the families in better positions to adequately cater to their children. More time is also spent away from home thus discouraging the

frequency of sex at the home; hence the tendency for possible pregnancies. The government should thus be active in helping to provide jobs for the majority of the populace.

List of abbreviations

EICVM: EnqueteIntegrale sur les Conditions de Vie des Menages

MINECOFIN: Ministry of Finances and Economic planning

No: Number

TFR: Total Fertility Rates

USA: United State of America

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