

The effect of women decision deprivation on child nutrition in Benin

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Effet des privations en décision des femmes sur la nutrition des enfants au Bénin

Résumé

La malnutrition, spécialement celle des enfants et l'égalité du genre demeurent une problématique dans plusieurs pays du monde et particulièrement dans les pays en développement. Cette étude examine comment les privations des femmes en termes de prise de décision affectent l'état nutritionnel des enfants au Bénin. Utilisant les données nationales représentatives de la base EDS 2018, elle adopte les modèles de régressions MCO et Logistic pour l'analyse multivariée. Les résultats indiquent que 14,36% des enfants souffrent du retard de croissance, 12,29% souffrent de l'insuffisance pondérale et 3,85% sont émancipés. Aussi, la privation des femmes en prise de décision dégrade la nutrition des enfants et a un effet négatif et significatif sur la taille-pour-âge z-score (TAZ) et sur le poids-pour-âge z-score (PAZ). Toutefois, aucun effet n'a été identifié sur le poids-pour-taille z-score (PTZ). Les résultats suggèrent que l'autonomisation des femmes à travers la prise des décisions doit être considérée comme partie intégrante des stratégies nationales de nutrition.

Mots clés : Privation en décision des femmes ; nutrition des enfants ; Bénin.

Classification JEL: C21-I11-I19

Abstract

Malnutrition, especially among children, and gender equality remain problematic in most parts of the world, particularly in developing countries. This paper aims at examining how women decision deprivation affects child nutritional status in Benin. Using nationally representative data from the 2018 Benin DHS, this study employed OLS and logistic regression models for the multivariate analyses part. Findings show that 14.36% of children are stunted, 12.29% are underweight and 3.85% are wasted. Also, women decision deprivation is child nutrition reducing and has a significant negative impact on Height-for-age z-score (HAZ) and Weight-for-age z-score (WAZ). However, none effect has been identified on Weight-for-Height z-score (WHZ). These findings imply that women empowerment through decision making may be incorporated as part of national nutrition strategy.

Keywords: women decision deprivation; child nutrition; Benin.

JEL classification: C21-I11-I19

Introduction

One of the major challenges for most countries, especially developing countries, is to ensure and improve long-term economic growth. According to the theory of endogenous growth, this growth is only possible in the long term thanks to technical progress which essentially comes from factors including human capital (Lucas, 1988). It designates the stock of knowledge that can be economically valued and incorporated into individuals. These are not only qualifications, but also and specifically in the case of developing countries, the state of health, nutrition and hygiene. This shows the importance of nutrition and particularly the one of children in achieving long-term economic goals.

The issue of malnutrition and poor nutrition of children is a major concern in many African countries. These problems are extremely important since nutrition is the cornerstone of the welfare of a country and is indirectly taken into account in the first three objectives of sustainable development. Despite the progress in reducing child stunting and morbidity rates, African countries continue to lag behind key indicators (IFPRI, 2016). This may explain why governments, through the implementation of programs and policies, are trying to increase women's access to resources in many African countries, including Benin.

According to national statistics from the Multiple Indicator Cluster Survey (MCIS, 2014) and UNICEF (2015), 30% of children under five years old suffer from chronic malnutrition. The prevalence of global acute malnutrition in Benin is 5.2% with 1% severe form with disparities at the departmental level. These forms of malnutrition affect negatively boys much more than girls and heavily children from 6 to 11 months (UNICEF, 2015).

The same statistics also shows that the level of global acute malnutrition varies a little bit according to the index of economic welfare of the household. Indeed, the poorest households have the highest prevalence of wasting (7%) compared to 4% among other household groups. According to the national statistics of the Demographic and Health Survey (DHS, 2018), 32% of children under five are stunted, 5% are underweight and 17% are wasted.

The nutritional status of the child is influenced by that of the mother. About 39% of children whose mothers are lean are stunted compared to 34% when their nutritional status is normal. The prevalence of stunting is enormously influenced by the mother's level of education. Thus, the proportion of children suffering from stunting whose mother has no education is two times higher than those whose mother has a secondary level of education. 5% of children are emaciated globally when the mother has no education compared to 4% of those whose mother has a secondary level 2 or higher. Also chronic malnutrition is a function of the

socioeconomic level of the household in which the child lives, with prevalence rising from a high of 41% in the poorest quintile to a low of 19% in the richest (DHS, 2018).

It is clear that the barriers to good nutrition for children are related to policies implemented in empowering women through access to resources and decision making. Since the last decade, Benin has adopted a national women's empowerment policy and several projects/programs have emerged to address these challenges. These projects/programs include the Rural Women Empowerment Project in Benin (AFR-Benin), which objective is to strengthen the economic power of women in rural Benin. Also, pertaining to the project of Resilience and Empowerment of Women in Agriculture (PRAFA), it aims at facilitating the access to land and adequate funding.

Additionally, the Government's Program of Action, with a view of promoting gender equality, has also adopted a national gender promotion policy articulated around the vision for 2025 "Benin is a country where equality and equity promote women's participation in decision-making, access to and control of productive resources, for sustainable human development".

Women are more likely than men to allocate resources towards their children's welfare in some low resource settings (Bruce, 1989). This allocation of resources influences nutritional status and depends on their bargaining power or even decision making power within a household (McKenna & al., 2019). A woman's degree of decision making in the household may affect children's health or may limit her ability to direct household resources to her children (Saaka, 2020). Several studies have shown positive association between women's autonomy through decision making and child nutritional outcomes (Lépine & Strobl, 2013; Carlon & al., 2015; Rahman & al., 2015; Shafiq & al., 2019; Saaka, 2020). Thus, actions leading to the marginalization of women may have negative nutritional consequences for the women themselves and their children (Smith & Haddad 2000; Smith & al., 2003). Investing in women is therefore seen as beneficial for improving human capital formation, particularly in nutrition, health and child-rearing (Quisumbing, 2003; Smith & al., 2003, World Bank, 2001; Yoong & al., 2012). However, others studies found a limit or no influence of maternal autonomy on child nutrition outcomes (Brunson & al., 2009; Dancer & Rammohan, 2009; Rajaram & al., 2016). The literature is still divided on the role of maternal autonomy on child nutrition outcomes and its relevance in some contexts warrants further investigations especially in Benin where malnutrition is the greatest risk factor for mortality and morbidity in young children (UNICEF, 2020).

Looking at all these problems and facts, one may wonder whether women decision making contributes to improving child nutrition in Benin. Does women deprivation in terms of decision making handicap good nutrition for children in Benin?

Despite the emergence of projects / programs / policies, little is known about the actual impacts of these strategies in alleviating child malnutrition in Benin. To our best knowledge, the only study is that of Alaofè & al. (2017) which focused on the Kalalé district of Northern Benin. This study goes beyond the district by taking into account the whole country. It aims to examine the effect of women decision deprivation on child nutrition outcomes in Benin. The rest of the paper is organized as follows: Section 2 summarizes the literature review. The methodology and data used are presented in section 3 whereas section 4 presents the results and discussions. We end up the study with a concluding remark.

1. Literature review

Malnutrition is a major risk factor for illness and death, especially among children, and it can lead to serious problems. Various studies have shown the impact of malnutrition on infant mortality (Pelletier & al., 1993). Research in the 1990s has already shown that stunted children have more diarrhea and are more susceptible to many infectious diseases, such as respiratory infection of malaria (Man & al., 1998). Due to the increased risk of infection, death and delayed cognitive development, malnutrition can lead to low incomes for adults, poor economic growth and intergenerational transmission of poverty.

Research on the link between women empowerment and nutrition, especially child nutrition, is growing. This theme, in the quest for gender equality has increasingly been the subject of many development interventions such as improving the nutritional status of the child. Since women are often caretakers of a household, the allocation of resources to women and their impact on the well-being of children is increasingly an issue of analysis. Interventions do not always succeed and malnutrition remains a problem.

In sub-Saharan Africa, women grow most of the food and are primarily responsible for caring for children. Discrimination against women in sub-Saharan Africa, and hence the norms, roles and gender relations that apply in this country could have a great influence on children's nutrition. Research has already been conducted on the correlation between gender and child malnutrition in different parts of the world. Most of this research shows that there is a relationship between these two variables (Castle, 1993; Coffey & al., 2013).

Women and girls often have the greatest burden of malnutrition because of their relatively lower status and power than men and boys (Black & al., 2013 ; Ndiku & al., 2011).

Empowering women especially through decision making is therefore a process of change in which women gain more power and thus have more ability to make their own choices (Kabeer, 1999). This allows women to be agents capable of making choices, controlling resources and making important decisions (Lee-Rife, 2010). Empowerment consists of two different components, resources and agencies. The resources in question may be economic, but they may also be diverse human and social resources that serve the capacity to exercise choice (Kabeer, 1999).

Child undernutrition is not only due to the lack of nutritious and adequate foods, but there are more factors that play a role in causation. UNICEF first described the nature and determinants of maternal and child undernutrition in a conceptual framework. This framework shows that nutritional status is influenced by three factors: diet, health and care. According to the framework, to achieve optimal nutritional status, children must have access to affordable, varied and nutrient-rich foods, appropriate practices in maternal and child care; and a healthy environment, including clean water, sanitation and good hygiene practices (UNICEF, 2013). These factors depend on the decisions which are made in the households.

Two different effects of women decision making on child nutrition emerge from the literature. In one side, some authors found that women decision making affects positively child nutritional outcomes (Lépine & Strobl, 2013; Carlon & al. 2015; Rahman & al. 2015; Shafiq & al. 2019; Saaka, 2020). In other side, no effect or negatives effect between women decision making and child nutrition have been found by others authors (Brunson & al., 2009; Dancer & Rammohan, 2009; Rajaram & al., 2016; McKenna & al., 2019). This shows that the subject remains important and needs further investigations. In the particular context of Benin, Alaofè & al., (2017) analyzed the association between women's empowerment and maternal and child nutrition in Kalalé district of northern Benin. They found that women decision-making was correlated with male child's WHZ and female children's WAZ. The present paper is in the continuity of these studies.

2. Methodology and Data:

In order to identify the impact of women's decision deprivation on child nutrition as well as the main determinants of child nutrition, the study adopt two types of measurement. One is related to child nutrition and the other is related to women decision deprivation.

2.1. Variables measurement

Child nutrition measures

The nutritional outcome of the child is measured by three nutritional status measures generally used in the literature. The chronic undernutrition measured by height-for-age z-score (HAZ) which captures linear growth in utero and early childhood (de Onis & al. 2007; WHO Multicentre Growth Reference Study Group, 2006). According to Victoria & al. (2008), HAZ is one of the preferred indicators of childhood nutrition and considered as a strong predictor of human capital. The long-term indicator of children's nutrition, weight-for-age z-score (WAZ) and the weight-for-height z-score (WHZ). Thus, we define underweight as $WAZ < - 2$ standard deviation (SD), stunting as $HAZ < - 2$ SD and wasting as $WHZ < - 2$ SD. The children concerned are those under 5 years old.

Women decision deprivation

Women play a crucial and potentially transformative role in agricultural growth in developing countries. But they face persistent constraints and barriers that limit their inclusion in agriculture (IFPRI, 2012). This means that they do not have a priori the same level of decision autonomy as men. We adopt the approach of Alkire & Foster (2010) to construct women decision deprivation index (WDD) and adjust for the data available in our sample. Six indicators are used and their corresponding deprivation thresholds are displayed in Table 1. Balanced weighting are used because it is more used and is considered as an appropriate arbitrary normative weighting system (Decanq & Lugo, 2009; Atkinson, 2003). Using the values 0 and 1 for each of the six indicators, we compute different measures of the WDD for each woman in the sample. Firstly, we calculate the incidence rate which corresponds to the percentage of women who are deprived in decision making. Secondly, we calculate the intensity of WDD which corresponds to the average deprivation in deprived women group. Finally, we compute the adjusted incidence rate of WDD. We use this adjusted incidence to evaluate the effect of women decision deprivation on child nutrition in Benin.

Table 1: WDD's indicators and deprivation thresholds

Decision indicators	deprived if ...
Large household purchase	The person who usually decides on large household purchases is husband/partner alone, someone else or other
Using contraception	The decision maker for using contraception is mainly husband/partner or other
Respondent's earnings	The person who usually decides how to spend respondent's earnings is husband/partner alone or someone else
Husband's earning	The person who usually decides what to do with money husband earns is husband/partner alone or other
Respondent's health care	The person who usually decides on respondent's health care is husband/partner alone, someone else or other
Visiting family and friends	The person who usually decides on visits to family or relatives is husband/partner alone, someone else or other

Source: Authors' construction, 2021

2.2. Estimation strategies

We use the equation below to measure the effect of women decision deprivation on child nutrition in Benin:

$$Y_i = \beta_0 + \beta_1 WDD_i + \beta_2 X_i + \varepsilon_i \quad (1)$$

Where Y_i is the child nutrition z-score, WDD_i is the indicator for woman decision deprivation, X_i is a vector of control variables and ε_i is the error term. The vector X contains the characteristics of the child, of the parents and of the household which are identified as determinants of child nutritional status in the literature. For each of the child nutrition indicators (HAZ, WAZ and WHZ), we estimate separate models under control of child, parental and household characteristics which can also affect nutrition status. According to the nature of these child nutrition indicators, we use the ordinary least squares (OLS) estimators for the models. To analyze the robustness of the results, we create a dichotomous variable for each of the child nutrition indicators and re-estimate the equation (1) using logit estimators.

Data

The data used come from the fifth Demographic and Health Survey in Benin (EDSB-V) 2017-2018. The EDSB-V sample is representative at the national level and of the 12 departments, for the city of Cotonou and the other cities and for the urban and rural areas. The national territory was divided into 12 fields of study corresponding to the 12 administrative departments and, in each field of study (except the Littoral department which has no rural areas), 2 strata were created: the stratum of urban and rural areas.

The selection of the EDSB-V sample was done, stratum by stratum, through a stratified area survey and at 2 degrees. At the first level, 555 Primary Survey Units (PSU) or clusters were drawn from the list of enumeration areas (EA) established during the fourth Population and Housing General Census carried out in Benin in 2013 (RGPH4, 2013), by carrying out a systematic draw with proportional probability to the size of the PSU (the number of households). Then, a count of households in each of these clusters made it possible to obtain a list of households from which was drawn, at the second stage, a sample of 26 households per cluster in both urban and rural areas, with a systematic draw with equal probability.

A total of 14,435 households (6,528 urban in 251 clusters and 7,907 rural in 304 clusters) were selected. All women aged 15-49 usually living in the selected households and present the night before the survey were eligible to be interviewed. In all households, children under 5 were weighed and measured to determine their nutritional status (wasting, underweight and stunting). The fieldwork for the main survey was carried out from November 6, 2017 to February 28, 2018, by 132 agents divided into 22 work teams of 6 people, including a team leader, three female investigators, an investigator and a health agent.

3. Results and discussions

3.1.Descriptive statistics

The table 2 below presents the statistics of some variables used in this study according to the child's nutrition status. In general, 14.36% of children are stunted, 12.29% of them are underweight and only 3.85% are wasted. Table 2 also shows that malnourished children come from households in which mothers are more deprived in terms of decision-making. Stunted children are on average older (19.8) than those who are not (13.7) but underweight children and wasted children are on average younger (20.5 and 20.7) than who are not (20.3 and 15.2). Boys are more stunted (48.6%), underweight (55.3%) and wasted (56.9%) than girls. Malnourished children live in large households than others and more in rural areas. They live also in households not covered by health insurance and which have not visited a health facility in last 12 months. The prevalence of child stunting (28.77%), child underweight (28.34%) and child wasting (28.47%) is higher in fon and related ethnicity than others.

Correlation analysis (Table 3) indicates a significant weak negative correlation between WDD and child nutrition indicators such as stunting and underweight. This seems to indicate that the relationship between WDD and child nutrition is negligible but this conclusion would be hasty and even erroneous. Indeed, the correlation coefficient only provides information on the existence or not of a linear relationship between two variables, only the empirical estimate which provides more judicious information.

3.2. Effect of women decision deprivation

The effect of WDD on child nutrition estimated models are presented in Table 4. This table shows the estimates results of six child nutrition models. Columns (1), (3) and (5) of Table 3, present the results of the child nutrition models using OLS. Columns (2), (4) and (6) present the same results using logit models.

Columns (1) and (3) show that WDD is a key driving factor of child nutrition status. Indeed, the results in column (1) and (3) show that the more women are deprived in decision making, the more the nutritional status of children (HAZ and WAZ) deteriorates. This indicates that women participation in decision making is beneficial for child under 5 nutrition. These results are robust since it is observed in columns (2) and (4) that the probability that a child is stunted or underweight is positively correlated with the degree of women deprivation in decision making. Women may be more likely to follow recommended feeding practices and provide more appropriate care for child if they have higher decision making degree in household (Shroff, 2007). These results are consistent with some empirical studies that found a positive association of women decision making with child nutrition (Saaka, 2020; Alaofè & al., 2017; Lépine & strobl, 2013).

The child's age is negative and significant and its square is positive and significant in the table 4. This implies that nutritional z-score decreases as a child grows up but a marginal change will be lower as child's age increases. These results are consistent with Imai & al., (2004).

Whether a child is female is positive and significant for Height-for-age and Weight-for-age but not for weight-for-height in table 4. This finding is consistent with previous empirical studies (Imai & al., 2014; Kandpal & McNamara, 2009; Borooah, 2005). However, it can be context specific because the sign of the child's sex dummy can differ across countries (Charmabagwala & al., 2004).

Mother's age is positive and significant associated with height-for-age and its square is negative and significant meaning that older mothers are able to have better nourished children because of their experience with nonlinear effect. Mother's education is positive and significant associated with child nutrition status, implying that more educated mothers are able to have better informations about child nutrition care. Having more persons in the household is associated with lower levels of nutrition mainly for height-for-age and for weight-for-age. Peulh and related ethnicity is associated with lower levels of nutrition mainly for weight-for-age and weight-for-height contrary to yoruba and related ethnicity which is associated positively with height-for-age. When moving from a poor household to a richer

household, the child nutrition status improves meaning that household wealth index is one of key determinant of child nutrition.

Concluding remarks

The findings of this study suggest some main conclusions. First, women decision deprivation reduces child nutrition; precisely it deteriorates child's Height-for-age z-score (HAZ) and Weight-for-age z-score (WAZ). Although it has a negative effect on child's Weight-for-height z-score (WHZ), this effect is not significant. Second, child nutrition is also influenced by others variables such as child's age, child's sex, mother's age, mother's education, household size, ethnicity and household wealth index. The robustness of the results shows that women's empowerment is a way by which Benin can achieve child nutrition.

In terms of policy, our results is in line with policies that aim to increase women's power. This can be done by effective microfinance projects which will not only increase the women's well-being and decision making but will also involve positive externalities toward children.

However, the increase in women decision making as a way to improve child nutrition should be seen as complementary to nutrition policies. Improving access to education, familial planning and household wealth are also plausible policies for alleviating child malnutrition due to the fact that mother's education, household size and household wealth have significant effect on child nutrition.

The study has some limitations. The cross-section analyze does not allow any causal conclusions since the bias problem cannot be ruled out (Saaka, 2020). Also, the paper did not analyze how a change in women decision deprivation over time affects child nutrition.

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Table 2: Child nutritional status by socio-demographic characteristics

	Stunted						Underweight						Wasted					
	No			Yes			No			Yes			No			Yes		
	Obs = 6095			Obs = 1022			Obs = 6242			Obs = 875			Obs = 6843			Obs = 274		
	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
	%			%			%			%			%			%		
WDD	0.55 (0.14)	0.33	1	0.56 (0.15)	0.33	1	0.55 (0.14)	0.33	1	0.57 (0.15)	0.33	1	0.55 (0.14)	0.33	1	0.57 (0.14)	0.33	1
Age of child (months)	19.8 (15)	0	59	24.5 (13.7)	0	59	20.5 (15.1)	0	59	20.3 (13.8)	0	59	20.7 (15)	0	59	15.2 (11.3)	0	57
Sex of child (male=1)	48.8	0	1	58.6	0	1	49.5	0	1	55.3	0	1	50	0	1	56.9	0	1
Age of child mother	29.4 (6.9)	15	49	29.5 (7.2)	15	49	29.5 (6.9)	15	49	29 (7)	16	48	29.5 (7)	15	49	29.1 (6.8)	15	46
Age of child father	36.5 (9.5)	15	95	37.2 (10.3)	17	95	36.6 (9.6)	15	95	36.2 (9.6)	17	95	36.6 (9.6)	15	95	36.1 (9.3)	20	71
Education of child mother (years)	2.4 (3.8)	0	17	1.3 (2.8)	0	17	2.3 (3.8)	0	17	1.6 (3.2)	0	17	2.2 (3.7)	0	17	2.4 (4.1)	0	17
Education of child father (years)	3.8 (5)	0	17	2.4 (4)	0	17	3.7 (5)	0	17	2.9 (4.5)	0	17	3.6 (4.9)	0	17	3.7 (5.3)	0	17
Age of HH	40.5 (13.2)	17	95	41.4 (13.7)	16	95	40.5 (13.2)	16	95	41.1 (13.8)	17	95	40.6 (13.3)	16	95	41 (13.5)	20	95
Household size	7.5 (7.5)	2	40	8.4 (5.6)	2	40	7.6 (4.7)	2	40	8.4 (5.6)	2	40	7.6 (4.8)	2	40	8.2 (5.2)	2	37
Marital status (married=1)	79.9	0	1	80	0	1	80.1	0	1	79	0	1	80	0	1	78.1	0	1
Sex of HH (male=1)	86.3	0	1	85.6	0	1	86.4	0	1	85	0	1	86.3	0	1	83.9	0	1
Place of residence (urban=1)	40.6	0	1	33	0	1	40.1	0	1	35.1	0	1	39.5	0	1	40.9	0	1
Covered by health insurance (yes=1)	1.1	0	1	0.1	0	1	1.1	0	1	0.5	0	1	0.9	0	1	1.8		1
Visited health facility in last 12 months (yes=1)	54.6	0	1	47.8	0	1	54	0	1	50.6	0	1	53.7	0	1	52.2	0	1

Source: Authors' construction using DHS (2018) *Standard deviation in parentheses*

Table 3: Correlation between WDD index and child nutrition

Child nutrition indicators	Height-for-age z-score (HAZ)	Weight-for-age z-score (WAZ)	Weight-for-Height z-score (WHZ)	Stunting	Underweight	Wasting
WDD	-0.0425* (0.0044)	-0.0464* (0.0019)	-0.0187 (0.2112)	0.0314* (0.0354)	0.0478* (0.0014)	0.0280 (0.0602)

Source: Authors' construction, 2021

* $p < 0.1$

Standard deviation in parentheses

Yes	-2.468	3.856	-0.003	0.089	-2.426	3.283	-0.023	0.093	.25	3.444	-0.209	0.154
Constant	-189.418***	36.229	-1.616**	0.796	-151.271***	30.19	-1.057	0.814	-31.004	30.455	-3.726***	1.296
Mean dependent var	-134.619		0.149		-98.402		0.128		-29.918		0.041	
R-squared / Pseudo r-squared	0.132		0.077		0.053		0.033		0.016		0.033	
F-test / Chi-square	22.418		232.543		8.011		105.351		2.903		44.983	
Akaike crit. (AIC)	56098.045		3546.260		54723.775		3386.880		55052.871		1520.743	
SD dependent var	133.050		0.356		109.305		0.334		111.247		0.198	
Number of obs	4491		4491		4491		4491		4491		4421	
Prob > F / Prob > chi2	0.000		0.000		0.000		0.000		0.000		0.030	
Bayesian crit. (BIC)	56296.750		3744.965		54922.480		3585.585		55251.576		1712.567	

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Source: Authors' estimations on STATA, 2021

